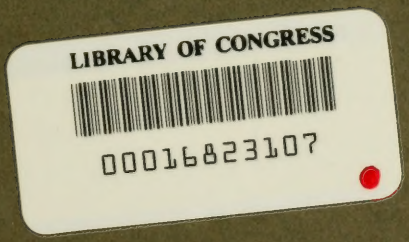
SF 196
.U5 G8

Author

Title

Imprint

16—47372-2 GPO



☞ After reading this Pamphlet, if you have no further use for it, please hand it to your neighbor. ☜

With the Compliments of the AGRICULTURAL REVIEW.

JOS. H. REALL, Editor and Publisher, 32 Park Row, "World Building," New York.

THE CATTLE INDUSTRIES

—OF THE—

UNITED STATES,

By HON. J. B. GRINNELL.

DAIRYING

—AND—

DAIRY IMPROVEMENTS,

By J. H. REALL.

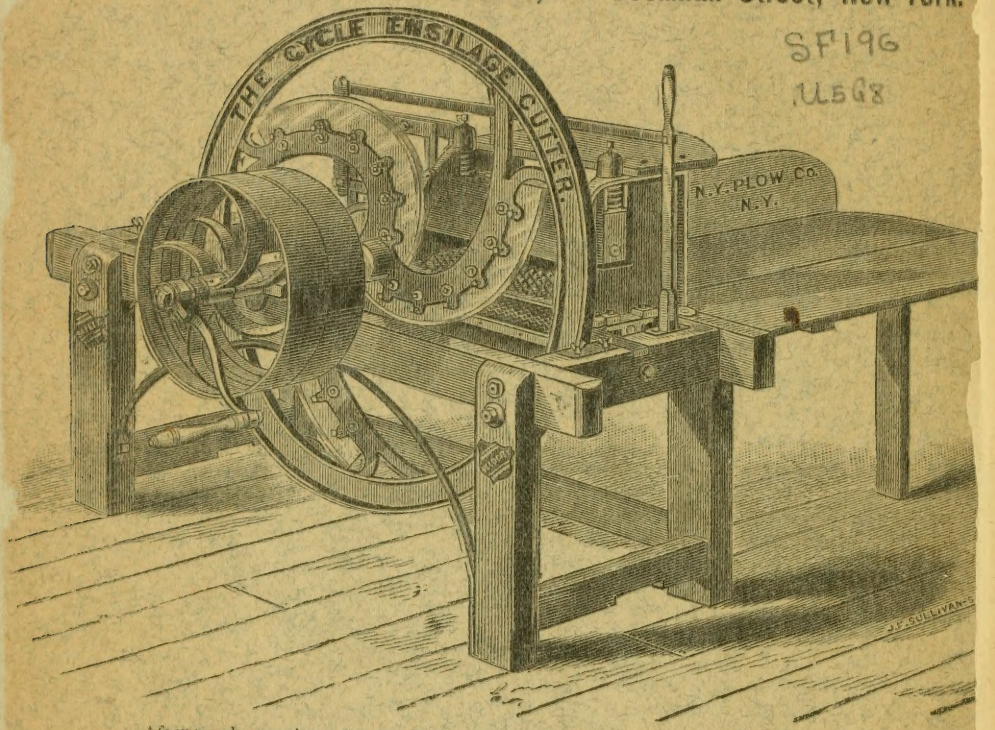
Reprinted from the AGRICULTURAL REVIEW and Journal of the American Agricultural Association, Edited and Published by Jos. H. REALL, Secretary of the Association, 32 Park Row, "World Building," New York. Published quarterly at $3.00 per year. Pronounced by the press and the highest individual authority, the best and most valuable practical Magazine published.

The Cycle Ensilage & Fodder Cutter.

—MANUFACTURED BY—

THE NEW YORK PLOW COMPANY, 55 Beekman Street, New York.

SF196
.U5G8



After much experience in manufacturing large cutters, we have found that the principle of this cutter is the best and safest FOR CUTTING GREEN CROPS FOR ENSILAGE, as well as for cutting Hay, Straw and Dry Stalks. It will cut Green Maize, Rye, Grass, Cow Pea, Millet, &c., &c., without clogging or winding on the feed rollers, and leaves it in good condition for ensilage. It combines great rapidity with strength, durability and simplicity of parts, and requires much less power than any other form of machine for this purpose. The knives have a smooth, keen, drawing cut, very different from the chopping cut of small cylinder machines. It runs with only one pair of pinions. It is absolutely safe from stones. It is simple and easy to adjust.

The knives are of finest quality of steel; they are attached to Knife-Holders, which can be quickly removed without disturbing the adjustment. This arrangement saves more than half the time usually required for grinding in other machines. The knives are adjustable by the simplest set screws, and are covered front and rear (Knife-Holders and Cover not shown in this cut.) They are easily kept sharp with a file. All parts of these machines interchange, repairs are kept on hand, and can be replaced without any difficulty. Oil cups on main bearings. SAFETY.—The rollers are well covered so as to avoid danger of being caught by glove or fingers. By means of a lever the feed rolls can be instantly stopped from either side. *In case of accidental breakage of any part of the machine, the transverse motion protects the workmen from injury,* also from being caught in the belt. CHAIN CARRIERS to carry stalks to rollers, also to carry cut feed to silo, saving much labor when handling large quantities. These can be attached to this Cutter at any time. Capacity 2 to 12 tons per hour.

33 inch,	2 knives,	size of throat 8x2	inches	36 inch, 2 knives, size of throat, 10x5	inches.
42 "	3 "	" " " 13x5½	"	48 " 3 " " " 16x6	"

Capacity according to speed and length of cut. All but smallest have also loose pulley.

Report of Proceedings of the Ensilage Congress, held at New York, January 25th, 1882, with numerous letters from Ensiloers in the different parts of the United States. Descriptions of Earth, Wood and Masonry Silos. Price, 30 cents. The next Ensilage Congress will be held Jan. 24, 1883.

Far-South Seed Corn, Corn Planters, single and double row, Horse Powers, Engines, Manure Spreaders, and all Agricultural Implements. ☞Send for Descriptive Circulars.

By transfer
14 F 1907

SUBSCRIBE FOR

The Agricultural Review

AND JOURNAL OF THE

American Agricultural Association.

A Quarterly Magazine of 150 pages, devoted to Agriculture, and containing the ablest and best articles by the first writers in America and Europe.

Its publication was begun in the Spring of 1881, by the American Agricultural Association—an organization embracing within its membership leading men in agriculture and kindred pursuits, and whose object is the promotion of agriculture in all its branches in all sections through the dissemination of the best information, and by National Exhibitions of the products of the soil. The AGRICULTURAL REVIEW, as the exponent of its aims and in recognition of the increasing necessity for the highest thought in agriculture, endeavors to supply the best literature on this and kindred topics. The fact that there was room for and need of such a magazine has been fully demonstrated by the reception which the AGRICULTURAL REVIEW and Journal has met, and the place it occupies with the ablest and most progressive men in all branches of industry and learning both in America and Europe. It will seek to maintain the reputation already acquired and to introduce such improvements as it may.

The contributors to the AGRICULTURAL REVIEW comprise the best talent, including prominent and successful experimenters and practical and scientific experts of rare ability and national reputation in their respective departments, among whom are Sir J. B. Lawes, LL.D., F.R.S., of England; Rear-Admiral Daniel Ammen, U. S. Navy; Francis D. Moulton, New York; Prof. J. P. Sheldon, of England; Gen. W. W. Burns; Hon. Cassius M. Clay; Dr. Peter Collier; Dr. Byron D. Halsted; Dr. E. Lewis Sturtevant; Prof. James Law; Hon. Edward Atkinson; Dr. John A. Warder; Prof. J. P. Stelle; Prof. R. C. Kedzie; Prof. E. W. Hilgard; Prof. W. O. Atwater; Prof. J. M. McBryde; Hon. T. Bowick, of England; Prof. A. E. Blount; Henry F. Moore, Esq., of England; Dr. Lareleye, Belgium; Col. J. H. Moore; Col. Geo. E. Waring, Jr.; Gen. Francis A. Walker; T. Bowick, Esq., Bedford, England; and others.

Address,

JOS. H. REALL, Editor and Publisher,

19 UNIVERSITY PLACE, NEW YORK.

ıch $3.00 sent now, which is the regular subscription price of the
l send the balance of the numbers for this year free, beginning
mber, published August 15, and including the October number,
year. CLUBBING RATES:—For $15 we will send six copies to one
year; and for $22.50, ten copies. Send in your own subscription
friends.

The Aug. number of the AGRICULTURAL REVIEW and Journal of the American Agricultural Association, published August 15, 1882, contains the following, among other articles:

AMERICAN AGRICULTURE, By GEN. FRANCIS A. WALKER, late Superintendent of the Census.

BURR OAKS FORTY THOUSAND ACRE FARM, By J. H. R.

THE COMPOSITION OF GRASSES AT THEIR VARIOUS PERIODS OF DEVELOPMENT, By CLIFFORD RICHARDSON, U. S. Dept. of Agriculture.

THE RAILROAD AND THE FARMER, NUMBER TWO, By HON. EDWARD ATKINSON, of Boston, Mass.

DAIRYING AND DAIRY IMPROVEMENTS, By J. H. R.

SEED GRAIN.—BARLEY, By T. BOWICK, Esq., Bedford, England.

THE SOUTH AS A STOCK COUNTRY, By COL. J. H. MOORE, Oakley, Arkansas.

NEW YORK AGRICULTURAL EXPERIMENT STATION, By J. H. R.

SYSTEMS OF LAND TENURE, By DR. E. LARELEYE, Leige, Belgium.

CORN AND WHEAT, By PROF. A. E. BLOUNT, Colorado Agricultural College.

THE SOUTH FOR EMIGRANTS, By A. POPE, Esq., Richmond, Va.

FERRYCLIFFE FARM AND ITS HERD, By COL. GEO. E. WARING, Jr., Newport, R. I.

REMINGTON AND FERNWOOD FARMS, By J. H. R.

EDITORIALS, ETC., ETC.

The November number will contain among others, the following articles:

THE ROYAL AGRICULTURAL SOCIETY'S EXHIBITION OF 1882, AT READING, ENGLAND, By HENRY F. MOORE, Esq., Frome, Somerset, England.

FEEDING CALVES, By T. BOWICK, Esq.

FREE TRADE, By HENRY J. PILLFOTT, Esq.

COL. J. W. WOLCOTT'S BLUE HILL FARM.

THE STORRS AGRICULTURAL SCHOOL, and the principal papers read at the Annual Meeting of the Society for the Promotion of Agricultural Science, Montreal, together with other valuable articles.

PRESS OPINIONS.

The farmers and cattle breeders of the country may well congratulate themselves that they have at last a well edited magazine to maintain their rights, educate their understandings and promote their interests.—*Boston Herald.*

Is the best paper published—*Phoenix* (*N. Y.*) *Register.*

It is national in the scope of its contents, and deserves to be national in its circulation.—*Agricultural Epitomist, Pa.*

Cannot fail to be one of the most useful agricultural publications.—*Maritime* (*N. B.*) *Farmer.*

The present is not only a highly creditable issue * * but will be found of great interest to English, no less than to American readers.—*Agricultural Journal, London, England.*

It is a journal of wonderful interest, and no progressive farmer's library can be complete without it.—*Empire State Agriculturist.*

It is a book of nearly 200 pages filled with matter of the greatest interest to agriculturists.—*Naples* (*N. Y.*) *Record.*

Contains within its 200 pages a valuable array of papers addresses and discussions.—*Springfield Republican.*

We commend the REVIEW to the farmers and planters of this section.—*Memphis Appeal.*

Bids fair to take a high rank.—*Seed Time and Harvest.*

The Supplement of the January number of the AGRICULTURAL REVIEW is the best issue of that valuable Journal yet published.—*St. Paul Pioneer Press.*

The JOURNAL has at once become recognized as the highest authority on agricultural topics in the world, and the most interesting and valuable publication issued in that interest, besides being a magazine of the utmost value to all classes, including the merchant, banker, manufacturer and all practical thinking men. It is beautifully printed on excellent paper, and is in all respects, including the matter, arrangement, typography, press-work and binding, a first-class book. It should be on every farmer's table this winter.—*The Evening Journal, Jersey City, N. J.*

This Journal is by all odds the most useful agricultural journal in the world.—*The Gazette, St. Joseph, Mo,*

* * * * It promises to be of great interest to all intelligent farmers, and all who care for progressive agriculture in the United States. It contains 150 pages of carefully prepared matter relating directly and indirectly to agricultural interests, with scarcely a dull word in its thirty-five addresses and papers. * * * * * There is so much to interest readers in this number that it is hard to select the papers which deserve special notice. * * * * *—*New York Evening Express.*

Its articles are of a very high order, several of the most advanced scholars of the age being embraced in its list of contributors.—*Commercial Advertiser, Canton, Ohio, Dec. 1st.*

It will certainly rank amongst the most useful contributions to the agricultural literature of this country. * * * * * * * * * * * There are papers from more than a score of the leading scientists of this country. The subjects discussed are all live ones, of paramount importance, and embrace nearly the entire field of agricultural investigation and thought. We have perused several of the papers and find the subjects ably handled, there being less of the dull and prosy and more of vitality and interest than is usual in papers on similar subjects. They have the rare merit of brevity and perspicacity combined.——*Ohio Farmer.*

* * * * It is without question a credit to the agricultural literature of this country.—*The Pacific Rural Press, San Francisco, Cal.*

* * * * Its articles, prepared by a large number of eminent writers both in this country and Europe, have for the most part a bearing on practical agriculture, and are such as every intelligent farmer will take pleasure in reading.—*The Homestead, Springfield, Mass.*

The Journal of the American Agricultural Association is the finest work of the kind we ever saw. It is a model of neatness and elegance. Its title page is exceedingly unique, and reflects credit upon the artist, printer and publishers.—*Albany* (*N. Y.*) *Evening Post.*

* * * * It is not merely a handsome pamphlet ; it is a valuable document, crammed with information which ought to be in the possession of every farmer in the land.—*The Democrat, Providence, R. I.*

It is a publication of great value to every one interested in agriculture. Its objects are not at all local, but cover the whole country with all its varied interests.—*Florida Press, St. Augustine, Florida.*

* * * * It is a treasury of scientific agricultural information.—*Express, Sag Harbor, N. Y.*

* * * * It is filled with important and instructive articles from some of the best known and ablest writers on agricultural topics in this country and Europe—practical as well as scientific men. The production of the various cereals, beef, butter, cheese, and kindred topics, are ably presented, and from the perusal of the same one can gain a store of useful information—*Elgin Advocate.*

* * * * It should be added to the library of every gardener and farmer in the country on account of the value of its contents.—*Boston Morning Journal.*

THIRD ANNUAL

National Agricultural Convention,

UNDER THE AUSPICIES OF THE

American Agricultural Association.

NEW YORK, August 20, 1882.

The American Agricultural Association will hold its Third Annual Convention at the Grand Pacific Hotel, Chicago, commencing Wednesday, December 15, 1882, and continuing three days.

Addresses will be delivered, and papers read by the ablest and best known Agriculturists, Scientists, and public men of the country. Questions will be discussed relating to Agriculture and kindred topics.

The Grand Pacific Hotel has the largest and best hall for Convention purposes in Chicago, and is the largest hotel west of the Alleghany Mountains.

Reduced rates of fare are expected from the different lines leading into Chicago, and it is designed that this shall be a worthy successor to the Conventions already held by the Association, the first at the Metropolitan Hotel, N. Y., in 1879, and the second at the Grand Central, N. Y., February, 1882.

Every farmer, and all interested in Agriculture are cordially invited to attend.

Membership in the Association $3.00 per year, including the registration fee, and entitling each to free admission to the Association's proposed Exhibition, to be held next year, and to all its publications, including the AGRICULTURAL REVIEW.

Payments made now will be good for next year

Address the Secretary, 19 University Place, New York.

N. T. SPRAGUE, President.

JOS. H. REALL, Secretary.

THE CATTLE INDUSTRIES OF THE UNITED STATES.

BY HON. J. B. GRINNELL,
GRINNELL, IOWA.

Our bovine animals are represented by one thousand two hundred millions of dollars. Their shelters and the lands—meadow, pasture and grain-fields on which their food is grown—are worth two thousand millions of dollars; the annual production of butter, cheese and beef, proximately, nine hundred millions of dollars. Cognate and closely related to this great industry, there are essays on stock management, treatises on cattle diseases, special pleading for favorite breeds, florid general descriptions of lands in the market suitable for herds; but, so far as known, for the novitiate and general reader, there is no late and comprehensive discussion and statement as to this popular and profitable industry. I have waited in vain for one with more leisure than is allowed me to supply an urgent want, and now yield, with diffidence, to the earnest solicitations of those enthusiasts, like myself, whose valued friendship is less distrusted than their judgment.

By way of preface; the writer may disclaim having breeds to champion, high-pedigreed animals for sale, lands or railway stock on the market, yet he is in sympathy and interest with the farmer; an owner of various breeds, and for many years an impartial student of values and adaptations. He is just returned from a trip of thousands of miles through the New West, of personal observation, and in search of the most eminent herdsmen from whom to gain facts, experiences and opinions worthy of public mention. Brave sons of farmers are restless on the limited area of the old home, not less than the ambitious and rich denizens of the crowded cities, and these it is my aim to inform by a multitude of counsellors in regard to a field of enterprise allied to the romance of the frontier and a rational employment under the stimulus of promised competence. Grasses, climate, topography, and facts regarding adaptations of lands, transportation of beeves, and whatever is deemed of mutual interest to patrons of railways and those corporations, will be noticed.

The Greek *Auxo*—representing the bovine, and meaning "I increase"—had a significance not limited to early times, when the prosperity of individuals was indicated by the amount of cattle they possessed; hence the worship of the golden calf at Sinai was natural, and pointed to that which was of value in the mind of the idolater. What less than a Christian aspiration

is the desire of our enterprising farmers to be possessed of that in which the mirror of the best reflects both pleasure and profit in ownership.

Oriental representation of wealth was in "much cattle." Job's fabulous thousand yoke of oxen has more than a parallel in individual ownership on our Western plains, where but a decade since the elk and the deer grazed unmolested. Now a single ranch loads a train of steers for the shambles, the animals often pausing on the way to be fattened by corn from the rich fields of Iowa and Illinois. A drive of ten thousand head from the West and South is not an uncommon affair. The cattle interest has kept even pace with the advancing civilization in the world's history, and more emphatically so in our own country, where noble ambitions and princely fortunes have been allied with the more humble devotees of improved stock and pure bloods. Railway extension has broadened the vision of the herdsman, who has recognized their utility, and the corporations themselves have a direct interest in the expansion and profits of our animal industry. An increased home consumption of beef, our proven ability to compete with profit in the markets of the world and to supply the demand, give high promise of stability and rational indulgence in great expectations.

IOWA AND THE CENSUS,

I may name with an apostrophe the proud mention of the State of my adoption. Unrivaled in substantial gains and a fitting example of progress, she points the way for the ambitious and intelligent of other States, perchance inviting comparisons, whereby the truth may become more apparent. Older States have a history, written by their own children. Ours has not reached that eminence, being but a youthful member of the family of States. Nor have her citizens been able to compete for the best animals and purest bloods, but they are entering upon a new era befitting a State 35 years in the Union, when the true confession is—a paradise of financial mediocrities, meaning none sordidly rich and few wretchedly poor. Neither the South nor the East supply their own demand for butter and beef. King Cotton reigns in one section; the artisan and the forge and the loom in the other, promoting natural and profitable exchanges—meat for capital and skill, bread for brawned labor.

The Empire State, so long a model in diversified industries, and holding a proud pre-eminence in the making of butter and growth of bullocks, now resigns her honors with the graces of a true brother, combining the gravity of age with the consideration of a father. The gain of New York, with all the inducements of high prices in goods and animals in the last decade, was six per cent., while that of Iowa was 131 per cent., and in numbers she is only exceeded by Texas, while in values exceeding any of the States. And this from what small beginnings, and under circumstances how adverse. Go back 42 years. Our cattle were, in round numbers, 38,000, or near one animal

to each 1,000 acres of our area. In 1850, 136,000; in 1860, 630,000; in 1870, 869,000; and in 1882 not less than 2,000,000. The appreciation in values has been in a higher ratio than that of numbers, there being many herds of an average value of $100 each, and single animals worth thousands. Forty years ago there was not a farm stocked with blue grass nor a well-seeded meadow, the early settlers being still under a delusion that this was no grass country. The western portion of the State was not sectionized, and by Congressional legislation one-third of our present area was deemed uninhabitable by our race, and resigned to the red man as his future hunting ground. This tract embraces an agricultural district where there are now cultivated farms, princely breeders, prosperous towns and populous cities. The cattle were scrubs, and the idea of good butter from prairie grass was not entertained. Railways were so remote that corn-fed cattle would shrink to lean stockers while driven to precarious markets, by way of the lakes to Buffalo, or the Mississippi to New Orleans.

Even now not one-half of Iowa's 35,000,000 acres are utilized, and the eminent adaptation of its soils to nutritious grasses is not widely known, except in the older sections, where close feeding has supplanted the native grasses, and clover and timothy seemed rooted to stay. By common consent of those conversant with the excellence of our beeves and the quality of our creamery butter, where pure and abundant water is the rule, this young State, now to the front, cannot be surpassed if our lands are reclaimed by drainage, and there is a study of the adaptation of breeds and a resort to those methods which secure the best results in the dairy. In this connection I cannot fail to mention the enthusiasm of Col. R. M. Litler, an officer of the National Dairymen's Association, who, in and out of season, has stimulated our dairy interests. He gives the number of Iowa creameries as 500, the annual product of butter at 85,000,000 pounds, which, at 25 cents per pound, is equal to $21,000,000, one-half of which is exported, leaving a revenue of over $10,000,000 for our butter alone, to which may be added from $2,000,000 to $3,000,000 from cheese exported. The relative increase of other States in dairy products is in this order: Minnesota, 121 per cent.; Wisconsin, 55 per cent.; Illinois, 35 per cent.; and, measured by the product of $35 from a cow, those in Iowa, Minnesota, Wisconsin and Illinois earned the last year the fabulous sum of $100,000,000. The pre-eminence of Iowa in her cattle industry and dairy products invites the mention of other States, like Kansas and Missouri, where there are the favoring conditions of climate and soil, and prepares the way for history, facts and experiences of residents of States and Territories which have recently been visited by the writer.

HISTORICAL.

It is not mere tradition that the cow came over in the Mayflower. We have not a record of her blood, but she has ever been linked with the

healthful rearing of children, and we cannot doubt they were famous milkers. In 1610 four cows and a bull were, after a long and dangerous passage by sailing vessel, landed in Virginia from Ireland. These were the first domestic animals seen in America, which was but 12 years before the Pilgrim Fathers touched Plymouth Rock, and two years after their landing there was an importation. From 1631 to 1634 Captain John Mason imported from Denmark into New Hampshire the animals which laid (according to Mr. Charles L. Flint, a high authority) the foundation of the native stock of New England. Our fathers were too much engrossed with the felling of trees, guarding against the savage, erecting schoolhouses, and warding off cold and hunger, to give good care to the stock, which was doomed to degeneration in these Western wilds. It lost most of its title to high blood, if early values and descriptions are to be credited. Ours was an uneven race, for at that period in the Old World those bloods, since famous in this country, were better fed and sheltered than the poor herdsmen. Sir Hugh Smythson and his compeers claim that, at the settlement of Jamestown and Plymouth, the Bates stock had royal care; that the best we have has an unquestioned pedigree for nearly 300 years, and that only by importations did our stock show improvement. Youatt's work may be consulted by the curious, and our devotees of bloods, and breeders inheriting the enthusiasm of their British ancestors, will resort to the Herd Book for details and facts we may not incorporate here.

Colonial agriculture made an early effort for the increase of cattle—as it it meant home-made shoes, butter and beef; the two latter, as articles of food, then accounted luxuries. Oxen were bred for activity and strength, and were of more utility in clearing forests than horses, and on meeting with a casualty among stumps could with economy be utilized as beef. It is the common opinion that the Devons predominated in our early history, combining hardihood and good milking qualities. When matched for the yoke they were fast walkers, and it was an incident of the early times, even as late as a hundred years agone, that wedding trips were made by New England pioneers North on sleds drawn by oxen. The first boast of the farmer and the largest representation of personal property was in his cattle, and from the Genesee Valley of New York to Northern Ohio and the West, no farmer is deemed to have been successful if not owning a herd or a number of cattle proportioned to his acres, and suited to the pail and the shambles.

Let me not enter the lists for a part in a discussion of the merits of distinctive breeds, but rather present those facts not within the reach of the general reader, and the rare instances of devotion to the bovine races which is at once creditable to the judgment and an index of professional pride. William, Prince of Orange, received a marriage present of cattle from his father, and it was a high token of nobility then to own an animal in a royal line—and they were the finest decorated walls where a portrait of a bullock

was hung in the best style of art. Lands too low or barren for rich pasturage held only a second rank; hence the boast of rulers of numerous herds, and those of unrivaled pedigree, when ornamenting a landscape view of the richest acres.

Our ancestors naturally imbibed the spirit of the Old World, and when possessed of wealth it was often used to improve the stock (which had degenerated under our coarse fare) by judicious crossings. George the Third raised stock men to a peerage. The Collings brothers, Earl Spencer, Bates, Booth, Bakewell, Fawkes and others aspired to, and were worthy of equal honors. This foreign spirit was contagious. Our own Webster, after a visit to England, loved to smell the breath of oxen coming up sweetened from his salt marshes by the coast; Clay, "Gallant Harry of the West," never wearied in efforts to secure meritorious animals, which were his pride, importing three Herefords in 1817 at a cost of six hundred dollars, thus linking his name with eminent owners; and the late Brutus Clay, of Kentucky, a modest gentleman and a judicious breeder, and Cassius M. Clay, so high an authority that he was called to the platform as a lecturer in the Yale College Agricultural Course, whose language we may hereafter quote. I find Samuel Thorn, of New York, worthily mentioned as the bold purchaser of Short-horns, and the successful breeder who enjoyed the proud distinction of having first sent back to England improved stock which opened the eyes of princely breeders to the possibilities of this country. Morris, whose family is associated with our Revolutionary history, had previously joined his herd with that of Becar and fifty years ago laid the foundation of many noble herds. Latham and Corning of Albany, Vail of Troy, and societies formed in Ohio and Kentucky, made large purchases, conferring benefits on their brother stockmen which are beyond computation. Mr. R. A. Alexander, of Kentucky, and his family, should not be omitted from the roll of honor, as later purchases give full evidence of forecast and pluck. Wadsworth of Geneseo, N. Y., Henry Holmes of Greenwich, the Cornells of Ithaca, A. B. Allen of New York, L. F. Allen of Buffalo, Church, Angell, Campbell, and A. B. Conger of Haverstraw, the latter paying $29,800 for three animals at the celebrated sale of the Campbell herd at New York Mills in 1873, all did their part for the general good.

In the Old World, Bates and Booth were the names which marshaled partisans under their respective chieftains, stirring blood not cooled during the lifetime of a generation. This lacks a perfect repetition in our history, yet brings us to the warm debates of the present era. At the fat stock and cattle shows in the West, where T. L. Miller of Beecher, Ill., with his Herefords, and J. D. Gillett of Elkhart, Ill., with Short-horn beeves without regard to pedigree; and D. M. Moniger of Albion, Iowa, the breeder of the celebrated Lexington and Short-horn cattle, which have won the best prizes—they and others contend for popular favor and medals, and whose favorites may be noticed in the later mention of distinctive breeds.

EXPERIENCES OF STOCKMEN IN THE WEST

Opinions do not make facts; verities should be the basis of opinions and mold all philosophies. An expressed opinion has a value according to the standing of its author. Spontaneous opinions, devoid of the coloring of an interested buyer or seller in the world's great market of matter and mind, are most esteemed, and those of this prime quality I present, that "by the mouth of two or three witnesses every word may be established." Facts from many States and Territories are hereafter incorporated, and, while they may not be in accord in details, nor alike full, yet are substantial and reliable, from the simplicity of their authors, who were prompted by a single desire to impart information, and not from hope of reward. Names and the homes of herdsmen may open the way for correspondence—perchance a visit—resulting in a good investment, or embarking in an attractive industrial pursuit.

In a journey from the Potomac to the Hudson, and westward for 1,800 miles, in December, 1881, I kept an open eye for grazing stock. They were invisible, save as seen sunning in the enclosed barn-yards, until reaching the North Platte, Nebraska, 200 miles west from Omaha, at the longitudinal line which separates the prairie grasses killed by frosts from the region of bunch and buffalo grasses. This chosen pasture has in its low grounds a natural adaptation to meadow grass, and verdure, ripened by frosts, yet sweet and nutritious. The long, wide North Platte seemed a proper barrier to the herds from the north driven southward by storms, and the South Platte a restraint to all the stock found between the two rivers—neither stream fordable, except in the dryest seasons. Here is the palatial residence of the Hon. Guy Barton, and ample barns for his full-blooded Devons, with hundreds of tons of hay for an emergency, and large tracts of land fenced with wire. It was at this point I began my observations, and, being farther West than Horace Greeley 20 years before, was reminded of his diary, compared with mine, at the same distance West. Here is his record:

"*Topeka.*—Beefsteaks and wash-bowls (other than tin) last visible. Barber ditto.

"*Manhattan.*—Potatoes and eggs last recognized among the blessings that 'brighten as they take their flight.' Chairs ditto.

"*Junction City.*—Last visitation of a boot-black with dissolving views of a board bedroom. Beds bid us good-by."

Mr. J. Kieth fed at North Platte, for Barton & Dillon, at Columbus, 400 steers, which put on 350 lbs. in eight months, weighing from 1,050 to 1,150 lbs. at three years. He estimates that there was a loss of 20 per cent. the last Winter for want of preparation for unusual storms. J. E. North & Co.,

Columbus, have 4,500 head 65 miles from the North Platte, and hold that they did not suffer a loss of over two per cent. in 1880. R. H. Henry has a ranch on Loupe Fork, 350 miles from Columbus, on which he keeps 4,000 head. He gives preference, from regard to safety and profit, to Texas stock as the foundation of a herd; has put up only ten tons of hay, not one feed for the entire herd. Mr. Henry drove 27,000 sheep from Oregon the last season, costing in that locality $1.50 each, and is now feeding 15,000 head on corn for an Eastern market, with good results.

Union P. O., Big Spring, Neb.—Mr. G. E. Thompson, from Washington Co., Pa., for many years the first county in the Union in sheep husbandry, has on his ranch here 3,000 sheep. They average eight pounds of wool each. The original stock was California ewes. He imports his bucks from Pennsylvania, one of which shears 40 pounds of wool and only a twelve months' fleece. (This is the largest story I ever heard uttered by a credible witness.) The sheep are afflicted with scab, but no foot rot. Cattle dislike sheep-walks and they do not thrive well together.

Wilton Creek, Nevada.—Hon. J. H. Hoppin I met as a passenger on a wedding trip westward. He went from New York to California, handled stock in Nevada ten years, drove herds of cattle from the Indian Territory and Texas to California and Nevada, thence on eastward to Wyoming and on to Montana. He says sage-brush land can be cleared off and become good grass land, raising fair crops often without irrigation. The drive east into Montana was 6,000 sheep in 1880, ewes and lambs, a distance of 700 miles. In 1881 he drove 5,000 head of wethers 1,200 miles and sold for mutton feeders at Laramie. Nevada is not so snowy as Wyoming, and one-fourth the land is good pasturage, with a fair supply of water. Mr. Hoppin says the census return is no full indication of the amount of stock in the West, since most owners take the benefit of a doubt. The best stockmen put up hay, yet a large proportion trust luck and sustain heavy losses, as in the year 1879, yet not so large as in 1880. He keeps 2,000 head of cattle and 10,000 sheep. A car of stock costs $100 from Laramie, and $200 from Nevada to Chicago, which is a special rate. He has an Oregon ranch, where there is good water and abundant grass. The drive from Nevada north-west is on the old California route through South Pass until the North Platte is reached. Oregon stock which does not go south will naturally come east on the Union Pacific Railroad at the Granger Junction, and with profit will tarry in the Nebraska or Iowa corn-fields to bring the top of the market. Cattle owners lost money in 1880, but made well in 1881. It is his estimate that 150,000 sheep were driven east from Southern California, 75,000 from Northern California, and 80,000 wethers from Oregon and Washington Territory, in 1881. From 4,000 to 10,000 were driven in each flock, at a cost of 25 cents each, and, crossing the desert of 70 miles, flocks kept their flesh on sage brush. Mr. H. puts up 700 or 800 tons of hay for reserve, encloses meadows, leaving the

rest of the land open pasture, and holds that by a readiness for storms, wit hay and more care, there is greater profit. A division of herds will be foun in the end to be necessary.

S. S. Chase, Esq., U. S. Marshal for Idaho Territory, has a large persona knowledge of Idaho, Washington and Oregon east of the Cascades, an judges that Idaho has 15,000,000 acres first-class grazing land. Snake Rive can be irrigated for a distance of 500 miles, and for 20 miles on either sid there is good water found by digging. The Solomon River Valley is one o the best grazing sections in the world—hay unlimited. There was no los on Snake River by starvation in 1880. Between the mouth of Raft Rive and Eagle Creek Bridge are 20,000 head of strange cattle, not includin 10,000 head of local cattle. He reports that a Mr. Haas drove 120,000 hea of cattle from Oregon to the East, grazing at North Park on the Yellow stone, where good grass was abundant. Mr. J. H. Pincheon has a wid acquaintance and reports from Ogden, on the U. P. R. R., north for 10 miles, good grass and water for irrigation, with a continuation of good qual ties up Snake River, then a sand country. Northward, crossing the Idah line, there is more grass and water, which improves westward on Solomo River. Fort Hall reservation has very fine pasturage.

Utah.—C. Layton, elder of the Mormon Church, has a farm of 2,00 acres on the railway, 22 miles north of Salt Lake, crops 1,500 acres, an raised 24,000 bushels of wheat and barley—wheat 20 bushels to the acr He uses a header for harvesting; no irrigation; keeps 200 head of cattle o the range and brings in beef in the Fall, leaving stockers out all Winte These he gets in the Spring. He fed 100 head for Winter beef on lucern hay, which grows two tons to the acre. Cattle bring $3 a hundred, gros and weigh 1,300 lbs. when three years old. He keeps 1,000 head of shee which are kept out on the range and get a good living on white sage. M Layton bought railway lands at $3 to $5 an acre, which are now worth $3 without irrigation. The land bare, or with bunch grass, will grow wheat. H was born in England; came here in 1842; has 50 in the family, includin children and grand-children; has four wives. The community does not sanc tion the use or sale of intoxicating liquors.

William Jennings, of Salt Lake, Superintendent of Zion's Co-operativ Mercantile Institution, has been in Utah 29 years; owns 2,500 head of catt in Salina, Southern Utah; has not seen them all for six years; sold the la season 550 head at $32 each, averaging three years of age; sells steers i August and September; no irrigation in the valleys in which they are pa tured. A good share of his steers are Canada and Kentucky breeds, crosse since 1870. The losses on the range were reported six to seven per cent. i 1880; heavier in 1879, owing to short grass and deep snow—equal to 25 pe cent. The cattle interest is now prosperous—not half the number there we three years ago. Kentucky blue grass does well where there is water; the r

vines are damp and soil rich. The Herefords are preferred as being the best beef stock. In his experience the Short-horn cows lacking attention and with too much milk, lose their udders. For a common range of stock Devons are well enough, but he wishes to keep up the size by a larger cross. Steers of the range average 1,400 lbs. each. Mr. Jennings keeps full bloods, and has 25 milch cows at his home, and has a breeding herd. He says, if the Government would part with its lands at a low price, there would be buyers who would irrigate and increase the production ten-fold. These are the extraordinary weights which he gave for show animals treated to the best known food for cattle. One steer, killed in December, 1880, at three years and five months, weighed, net, 1,612 lbs.; a heifer, at four years, bred in Kentucky, proving barren, weighed, beef and tallow, 1,750 lbs. The steer killed, the owner avers, was better than any killed in London in 1880. Mr. Jennings was at the Birmingham Show, in England, in 1876, and there was not on exhibition stock equal to that reared in Utah.

Prof. M. E. Jones, botanist, of Salt Lake, has visited all sections of Utah, and finds but small tracts of lands that will produce well without irrigation, and but 2,000 square miles capable of raising grains and grasses by irrigation. There is no buffalo grass, as in Colorado, but bunch grass on the mountains and by the foot-hills, which keeps cattle the year round. Stock is lean in the Spring and beef blue. A wild wheat grows in the valleys called Blue Joint, which is cut for hay. All the grasses grown in the States will grow in Utah by irrigation. Horses and cattle do well most of the year, but do not thrive if kept with sheep. They have two seasons, Spring and Fall, for branding and rounding-up. No hogs in Utah. The Mormons hold most of the water and land that can be irrigated, except east of the Wasatch Range. There are but 447 square miles of land under cultivation, and this is confined to narrow strips along the base of the mountains and by the streams.

Haley, Idaho.—This is the residence of Hon. H. P. Turner, of the Idahoan Mine. It is on Wood River; production, silver and lead; sent out 1,000 tons to Salt Lake for smelting in 1881, and has 4,000 tons of low grade ore waiting for a railway, the survey of which is 30 miles distant. Judge Turner has been 600 miles up and down Snake River, and reports it an all-Winter range; meadow, with meadow lands and water; timber scarce; uses wire fences. Some sections of Snake River are well timbered with pine and fir. Stock wintered well in 1880.

Bridge, Cassia County, Idaho—The residence of J. Q. Shirley. Was from New York; has been in Idaho and California for 30 years; drove cattle from Missouri to California in 1853, consisting of 600 head; then, in 1869, brought cattle from California to Montana, in a drive of 1,700 head; residence since has been in Raft River country and Southern Idaho; is now the owner of 2,500 head of cattle, 300 horses and 600 sheep; cut 500 tons of hay, and

fed steers to ship to California, via Central Pacific Railway, in January. The grazing part of Idaho is a superior stock country. Moves cattle from Summer to Winter range, and have but few losses. The calves are separated from the cows in Autumn. In breeding horses, he crosses the common stock with the Clydesdale and English draft with good success. The sheep first kept were coarse-wooled; of late has crossed with Spanish Merino bucks, and secures nine pounds of wool from a sheep. The weight of steers at three years is about 1,150 lbs., without hay. The Devon cross, though not as large, is a good one. Stock always active and fat. The stock of all kinds gather round the Warm Springs, and make a circuit in range of 30 or 40 miles. The Short Line Oregon Railway strikes a 30-foot vein of coal 40 miles west, then Warm Springs and farther on Soda Springs. It follows a fine Summer range and the great cattle trail from Oregon. After crossing the Utah & Northern Railway, there is good grass, but heavy snows; extra range in the region of Fort Hall, and good grass down Snake River to Oregon. Eastern Oregon will develop every way in cattle, which will naturally go south-east on the Union Pacific Railway. Cattle are scarce and high; yearlings are worth $10 each. It is unsafe, say on the Laramie plains, to be without hay. I have done driving, and had rather brand calves to make money, caring well for young stock. There is a great advantage in wintering stock where there is timber.

Laramie.—Here I found D. C. Holcomb, Esq., who shipped 2,000 head of steers from Laramie weighing 1,100 to 1,200 lbs. each. J. B. Hutton shipped 1,000 head that sold at $50 each in the yards. These were raised in the lowest water country, Southern Wyoming. Sudleth & Montgomery shipped 2,300 head to Chicago, and sold at an average of $4.50 a hundred; average weight, 1,200 lbs. each. The North Park has not only good mines, but a fine range for cattle, and they came out well in the severe Winter of 1881. This park has about 2,000 square miles, and on the range there are 3,000 horses and 10,000 head of cattle, encircled by grand mountains, which are covered with timber and the peaks with snow.

Cheyenne, Wyoming Territory, the headquarters of Swan Bros., from Indianola, Iowa. They began in 1874. The range is north and north-west of Cheyenne, on Chug Water and Sabille and Laramie rivers, the northern limit being 120 miles. They have a breeding and home herd at the head of Horse Creek numbering 300. It is their plan to keep bulls up; also to sort out young heifers with calves. In 1881 they branded 8,000 calves, and have a total of 53,000 head. They admit a loss in the Winter of 1881 of 8 per cent. Sold in Fall of 1880 8,000 steers, at $34 per head; have 50,000 acres fenced, and will enclose more. Hon. A. H. Swan is of the opinion that 10 cattle die for want of water to one from cold or hunger. A horse herd is kept of 400 head, consisting of riding stock and Clydesdales, which are bred at a great profit.

Messrs. Sprague & Warner, the princely grocers of Chicago, have a herd of many thousands, south of the Union Pacific Railway, in Nebraska, which bring large returns. They do not admit heavy losses, and are enlarging their business. They talk of the Oregon branch of the Union Pacific Railway, which goes through the richest part of the country west via Boise City to Baker City, keeping north of Snake River to Ft. Hale. It will open a wide field for ranchmen, and develop mines which are rich.

Colorado.—Wilson & Tucker of Deer Trail, Col., have been West 14 years, all the time in stock-dealing, some in real estate in Denver. Their herd contains 6,000 head, crossed with Short-horns and Herefords. Short-horns are best to cross on Texas stock. Hereford bulls must be cared for in the Winter. Have had no experience with Devons. Hay is not cut for cattle. Wean the calves in the Fall. They have no wind-mills, but they could be used where there is no surface water in the Winter. Grass will grow without irrigation on bottoms. (I saw eastward of Deer Trail many stacks of hay and enclosures of wire fence.) The ranchmen put up hay for horses, sheep and bulls. The best stock for us—"Rustlers." Bloods will lay down in the storms and die. With small herds, and care of young heifers and the bulls, a better per cent. of calves. We only see our cattle in the Summer, and mean to keep them from crossing the Arkansas River on the south. There was a big loss last Winter; many short from 25 to 50 per cent. I sold off the old stock and moved the rest on the Republican, where there was less stock and good grass. Sold 800 steers, 4 years old, weighing 1,270 lbs. each; 3-year-olds, 1,150 lbs. each; shipped at Deer Trail. Own 250 horses; have 100 saddle horses; cross-breed mares with high bloods. (I saw samples of stock in fine order and of good style.) Not less than 50,000 head of cattle drifted last Winter to Arkansas River and Los Animas. They round up at Pueblo and region, and go north after being gathered. In the storms, snow is so blown as to leave bare spots, else the cattle would perish. The company has 60 miles of wire fence to hold steers. It costs 9 cents a pound for wire at Denver. Water in Eastern Colorado is got at a distance varying from 20 to 90 feet.

J. H. Hittson, of Deer Trail, Colorado, has been here seven years; his father, just deceased, came from Texas 11 years ago; had 15,000 head in 1880. Mr. Hittson put in $7,500 as capital in 1874, buying 1,000 Texas yearlings. He closed out February, 1878, with near 2,500 head, which sold for $39,520—a net gain of $32,000. Put up no hay, except for horses. Owned no land, and cattle ranged from Nebraska to Arkansas. There is plenty of water in streams on the range. The steers and all cattle belonging to the estate were sold this year; shipped 100 car-loads to Kansas City. The grass is good at Republican and Arkansas Rivers. He uses Short-horn and Hereford bulls; likes the Hereford best. Half-breed crosses are the strongest. Gives a preference to Texas stock for making money, as they grow larger when brought north.

In the older Eastern and Middle States beef is but an incident contrasted to a general purpose in the West. The old cows and worn-out oxen are brought to the butcher's block. Few except the more promising calves for milkers are spared above from one to four weeks, and the milk is shipped to the city or made into butter or cheese. So few are raised from calves that thousands are brought annually from the West to recruit the herds of milkers, which of late are the grown calves sent by rail to Illinois and Iowa, and return by rail after two or three years' growth.

The rule East is good feeding and in warm barns or sheds. On the passing trains the cows seen by the straw stacks, with a stable seal (manure) and a smooth coat, indicating the philosophy of the owners as to the economy of warmth in saving feed and manure, which is so trivial a concern on the Western prairies. The work in stalling and cleaning out stables is considerable, and it does not seem easy to escape the vassalage of from five to six months in feeding, and the expense of ten tons of hay or its equivalent, at a varying cash value of from $8 to $20 a ton.

This expense leads to a close study of adaptations and a severe selection of cows, for only good ones will keep a balance on the right side of the ledger. The high cost of grain prevents full feeding, with rare exceptions; and, when breeding stock is shown in competition with that better fed West, it lacks the size and showy features which captivate the beef growers; hence Eastern fancy breeding for Western markets has not been a marked success, however faultless the pedigree.

To furnish milk for 3,000,000 of people or more in the cities at a profit has taxed fully the faculties of the inventive indomitable rural Yankee nation. The cows he has groomed, the milkers and feeders are trained, and, to a minute the milk cans are at the railway platform. Thus to an adept in bargains and milk-pooling contracts, and a candidate for the best customers, economical feeding becomes a necessity to maintain the fiscal standing of the dairyman. Steaming food has had a run; cutting hay and straw and stalks has been more in vogue by the use of horse-power and steam; and of late a system of ensilage is awakening wide and earnest thought. This is the preservation of green fodder in pits for Winter feeding. Mr. C. W. Mills of Pompton, N. J., and others, claim that by the use of corn sown, and cut when green, a cow may be kept the entire year for $12, as against $80 by the old methods. Plans for boxes and pits are simple, and the construction so cheap that great results are predicted from these processes, now without our province to elaborate.*

THE CATTLE CENTERS.

West and south of Chicago, for 400 miles, the methods of stockmen are only objectionable to the staid brothers of the hills, rich valleys and suburban

*See JOURNAL OF AMERICAN AGRICULTURAL ASSOCIATION, Vol. 1, a minute description of Ensilage by Francis D. Moulton, in the best style of a clear and attractive writer.

homes in the East, who see nothing to commend but the expansion and the money made ; and this last incident, it must be admitted, has grown out of these late favoring conditions—barns or sheds for the stock, butter and cheese making, the use of better cows, and realization of good prices for beef and dairy products. Twenty years ago a dry and warm shed in Iowa was the exception and not the rule ; scrubs the rule and not the exception. Heifers were saved for their beefy looks, and not for points as milkers, and were milked by chance or in accord with the whims of owners. Steers were fed on the side hill, where the rains would wash away the manure, while the bushes or a rail fence was all the protection afforded the stock, eating from the ground with the swine that reveled in the droppings.

Barns are not now requisite, and many of the large feeders prefer sheds to the narrow enclosures, and corn constantly kept in the boxes, to measured rations. This is their reasoning: "I have not capital to put into a barn with ample hay-lofts and stable room for hundreds of steers ; nor can I find the men who are inclined to stable cleaning. Besides, save in extremest cold days, the corn-fed bullocks do not choose close quarters, but the open field and run, with bracing air." A stomach full of corn, they reason, will furnish the caloric, and greater gains are reported by open feeding than by housing, thus avoiding barn cost and stable cleaning. A good outfit is, say for 100 head, a yard built on a slope, with a shed opening to the south, built of straw and poles or boards, enclosed in a five-acre lot. A wind-mill pump or a running stream is a necessity, with boxes, three feet up from the ground, for corn to be broken in the ear or shelled. The undigested corn will feed and fatten two shoats to the steer, or, if large, one hog to the steer is the rule. Spring and Fall feeding is now more common and most profitable, avoiding resistance to the cold and requiring less grain where access is had to good pasture. Soaking the corn is found to be great economy, and the swine are healthy and thrive as by no other known feeding process. If the Fall and Summer beef markets are lower, there is found a compensation in less grain required and more rapid fattening of both cattle and swine. Fair beef is made by 200 days feeding, which should put on from 300 to 400 pounds of meat and 200 pounds of pork, by the use of 100 bushels of corn, or a half bushel a day. If the basis is a stocker of a weight of 1,000 pounds, and the beef from $4 lean to $5 fat the hundred when corn fed, and a gain of pork equal to 200 pounds, this brings a net return of 40 cents a bushel for corn, which is above the average price in the crib at the railway station for the last 10 years. This process of feeding saves the tedious hauling of corn to market, and is a great equalizer of the value of corn-lands, whether near or distant from railways. I estimate on the basis of 100 beeves, a saving of 300 days' service with a man and team. Our enterprising feeders who ship hundreds annually have no special advantages over the small farmer, since he may grow the corn, and do his own work, and have access

daily to the record of the markets, and accompany his stock to Chicago or sell it as is his pleasure.

COMMON FEEDING

engrosses the largest number of the farmers who are located in the newer portions of Missouri, Iowa, Minnesota and Eastern Nebraska and Kansas, where there is a dependence on native grasses, and east of the longitudinal ranges of Winter grazing on bunch or buffalo grasses. They have a rude but not unprofitable system under an improvement in breeds and the introduction of butter and cheese making and the growing of a larger acreage of corn. The plan is to secure cattle to consume all the corn-stalks on the farm as well as the wheat, oat and barley straw, and make up for any deficiency by moving the native prairies, which, except in rare dry seasons produce a good burden of hay. That cut on the lower grounds is of less value, but brings the older stock through in fair condition, with an allowance of corn in late Winter. Large herds are made up in a given locality, and placed in charge of one man with a horse; he is able to keep from 300 to 600 out on the open prairies, near good water, at a cost for five or six months' attention of $1 a head. Their thrift depends much on the quiet maintained, and if yarded in not being kept long in confinement. The small young stock do not grow in a large herd, and cows with calves have an unequal chance in a mixed herd; indeed, the improved methods require a separation of the sexes and a return to fresh grass after the first severe Autumn frosts. The heifers are bred at two years of age, and the steers find ready purchasers coming three years of age, to go into the meadows and feed lots in the older sections where corn is abundant, at the cost to the purchaser of an average of three cents a lb. or $30 a head, while the heifers are sent to the butcher or kept for milkers. The practice of allowing the calf to follow the cow has been quite common, and is now the rule with the large farmers where the creameries and cheese factories are not introduced. These practices grow out of the want of capital by the land-owners; to stock and fence their lands and erect buildings; but are to be commended in eating out the native grass, which is good for the land-owner, and consuming stalks and straw by the cattle rather than to be wasted by fires, leaving only impalpable ashes to be driven by the winds and of no value to the soil. The cheap and effective barriers found in wire fences are fast enclosing large tracts of land, and yearly narrow the pasturing range, and invite the sowing of tame grasses ready for full feed when the steers are most apt to take on flesh. A tract of raw prairie is worth from one to three dollars an acre more after a few years of close feeding, it being easier broken, and sure to bring a good crop the first season; hence the enterprising stock-grower, having grazed the non-resident lands, is able, by the help of a rising family, to enlarge his boundaries by purchase and keep his sons near home with full employment; and the ownership of a quarter section in fee is not an unworthy ambition for father and son.

After a quarter of a century of observation amidst all the fluctuations of markets, I know of no sober, pains-taking enterprising breeder and raiser of cattle on cheap lands in Iowa until maturity that has failed by reason of droughts, floods, storms or disease, or who has not found a fair return for his labor by improved cattle, and the enhanced price of land ; attaining in many instances not only full compensation, but ample provision for days of decrepitude—even wealth. I have seen the breeder of fast horses left without credit; ambitious sheep-owners, from diseased flocks, sold out oy the sheriff, and an army of speculators reduced to claiming a homestead exemption, and their neighbor, courageous and prosperous as a rule, clinging to his herd.

RANCH

is a Spanish word, early signifying a hut, later a place of resort for cattlemen, now with a wider meaning : a large cattle establishment ; distinguished from hacienda—which is a cultivated farm or plantation. But how obtained and what the requisites for the one most desirable ? They are open to the world on all unsectioned tracts of our domain, with this qualification, that he who has pioneered may have selected the best and is entitled to all implied in a squatter's claim and his sovereignity—a tract of land not always clear as to its boundary, but held as property under border regulations, and by the title of occupation which it would be presumptuous for a stranger to controvert. Hence a spirit of greed and large claims, many extending 10 or 50 miles by 10 miles, and, when covering too great an area, there are convenient if not real partners, in herdsmen and adventurers, who are glad of a home if not rich in cattle. Springs are highly valued as in Oriental countries, and a good camp by a clear, never-failing stream is a small fortune. Next, a ravine with a dense growth of bushes or timber, with hills, bluffs and winding ways called canyons, where stock flee in storms, choosing the high ranges for Summer pasture. Ranchmen have a scale of prices for their possessions, not more variable than those of the Eastern land dealer, with abstracts and warrantees, and are ready to leap into the saddle on finding a customer and push on, with or without a herd, to "pastures new."

The best of locations, where there is isolation and no past or no prospective strifes, as between the herdsmen of Abraham and Lot in old Canaan, are worth from hundreds up to several thousands of dollars. In the encroachments societies are formed, where the metes and bounds are fixed, and a trespasser is not to be countenanced ; yet strong parties combine for mutual advantage in retaining extended ranges, and to facilitate herding. Localities nearest the railways and supply stations have the preference, and those near Indian camps and reservations are the least desirable, save near what is the well defined Indian Territory, where cattle are grazed in large numbers for a small sum. No adequate estimate of the number of cattle on the ranges can be formed by a view from the moving trains, since the

timid wilder herds are in the distance, and in the stormy and cold seasons they are in the shelter of brush and crowded in the ravines and draws, where the water gurgles and the light snows are driven off by the winds. The mortality would be fearful but for the animal locomotion which sends them to these places of refuge with quite as keen instincts as those of certain feathered tribes that make their flight to congenial climes. There are deep local snows for months, but small bare spots are visible, the only resort to satisfy their hunger. Then a dry atmosphere does not allow the snow to cling to the stock, which they shake off with as decisive and effective motions as the mustang throws his rider. There is another fact in the ministry of nature that inures to the comfort of the bovine and prevents loss in storms. The buffalo of the North and the Siberian fox have a coating of hair and of fur suited to their wants, and I found that herds acclimated were covered with a dense coat of hair, long, oily, and compact, with white spots below the surface answering to the dandruff in the human hair. This mitigates their suffering by cold, for as bovines they are wanting in the good sense of the horse, which uses his limbs in exercise to maintain vigorous blood circulation, while the cow, shivering, braces up inactive, waiting for any fate. Hence I judge it is not a mere fancy that the descendants of Spanish or Texans in a long line of ancestry inured to storms, and without protection by their owners, are the best "rustlers," and give proof of these qualities so desirable where there are inadequate shelters from great exposure to storms.

The grasses found indigenous in the various localities are so similar that when you know one variety you know all. A dry Autumn prepares them to resist the action of frosts. They are found to have the qualities of good hay, being sweet and retaining fattening qualities until a new crop starts in the Spring, the old of necessity of less value as exposed to rains, when they waste and rot. Then there are two kinds of sage brush eaten in an emergency, the white variety being in the Spring in a measure free from the Autumn bitter taste, and nutritious. It grows nearly a foot high, and is of great service when snows are prevalent. The buffalo and the deer are said to relish and fatten on it, as cattle will certainly. Animals unacclimated, when not crowded, make a good growth and fair beef on our vast western ranges, where there is but the aspect of barrenness and a picture of desolation. It is not to be inferred that there is uniform good pasturage, for in certain localities there is absolute barrenness, and so much sand that vegetation is not possible. Alkali sections are not myths, and "bad lands and staked plains" have a meaning.

Cattle are not improved as they might be by a Winter separation of the sexes—the weaning of the calves and the feeding of heifers, weakened and emaciated by early maturity and the rearing of a calf. Cannot the death-rate be reduced, and there be a larger show of "the survival of the fittest?"

I find few to approve present methods, which are in disregard of economic plans and Nature's laws, proclaimed since the days of Moses. There is to be partnership of "pains and gains," and fewer boasts of herds numbering many thousands. A lottery like pursuit in the ownership of property out of sight and beyond control is to be exchanged for a regulated, established industry, which the presence of railways makes practicable, facilitating exchanges, moving stock and bringing the wind-mill and fencing material from afar to the cattle farm. The railways have a direct interest in a dense population and in many herds to tread out the bunch grass, that by cultivation and the enriching by irrigation, there may spring up in its room grasses forming a compact sod. This is everywhere the foundation of pastoral wealth, and in association with the higher plane of rural life inviting into partnership the mechanic and mill owner ; stimulating the raising of trees in adornment of now desolate plains, and the erection of school-houses and churches, as in the past, and forever more to be the accompaniments of the best American society, in its march to a higher civilization, not found in the saddle of the ranchmen, as a rule, nor promoted by the excitements of the long drives and the round-up revels.

THE ROUND–UP

is a Spring and Autumn revel of stock-owners, herdsmen, cow-boys, and all interested in a brand in a given section of the country. It is the hunt for beef-steers, calves for branding and separations, according to ownership, for a remove to the Summer range. This rural episode grows out of a dispersion of the herds before storms and in search of food or water.

With a driving herd a round-up is made every night, to keep them together ; but the rounding-up to separate herds is generally done at a time designated by law or determined by commissioners chosen in each county for the purpose. In Colorado the commissioners publish in the Spring the places for the round-ups for every day during a period of six weeks, usually beginning in the middle of May. The places are generally a distance of twenty miles from each other. Every ranch or neighborhood then fits out its squad of men to search and separate the cattle. At a given hour the wagons and outfits are seen starting from every ranch in the State and Territory toward a common rendezvous on the unfenced plain. The squads are divided into various parties, each properly officered, and the exciting work begins. First the horsemen begin at the edges of the pastures, defined by the foot of mountains or banks of rivers, and sweeping around the boundary, start the cattle toward the rendezvous. It often takes four, five or six weeks to get the wanderers in. During that time, with driving the cattle by day, and night-herding or keeping them from scattering at night, no man gets over five hours' sleep out of the twenty-four.

Good feeding and hilarity is the rule, and high toned courtesy—a director

and judge—settling disputes on the Plains beyond the shadow of the blind goddess Justice, where litigation is less common than in many densely populated sections—Judge Lynch deals with cattle thieves and marauders in a way that the offenders "tell no tales," yet a fleet horse often eludes the pursuers, and saves the rider from summary punishment.

A well established brand is extensively printed in local papers, showing the steer, ear-cut, or hip, shoulder or head marks, and associated with a liberal, well known name, has often a large money value ; hence the combinations and blending of capital under one firm.

It is reported that a small owner is apt to have no more consideration shown him than there is shown to the small fish in the sea, and he is quite willing, if with only feeble courage, and equipped with a low-necked steed, to be absorbed for a proper consideration.

The unbranded cattle, or those of unknown owners,are called "Mavericks," and in some of the States they go into the county educational fund, but usually are slaughtered for the sirloin beef and the hides, which are sent to the towns. Semi-annual divisions are becoming more common under the better policy of weaning calves, separating the young milkers, and enclosing separate breeding herds of both sexes, where the steers may be quieted for shipment and the more valuable cattle kept from the large and often drifting herds. I saw many steers enclosed for the January market, and the owners of the better classes of cattle, I observed, were happy in showing their fences and large ricks of bright hay, ready for the emergency of deep, crusted snow.

OUR STOCK COUNTRY GEOGRAPHICALLY.

We have every variety of desirable soil and climate, and in Nature constituent natural elements of an empire but partially developed, not uniform in adaptation to cattle husbandry. The sugar and tobacco lands and the cotton plantations of the South have their uses, but are not the natural abode of the herd. Our older States have led the way, but are now crowded and allured to other industries by the competition of the prairie corn States, and the facility with which beef is grown in the Far West and thrown on their markets.

What all our older States aspire to do is to raise the best stock for the dairy, obtain a good price for surplus beef, and attract the West to become purchasers of their fine bloods for breeding purposes. So long as it seems necessary to use expensive fertilizers to insure crops, and buy hay worth from $10 to $20 a ton, the young stockman turns his steps towards newer lands and cheaper acres. These he finds in the Central West, and abundant room for large capital and encouragement to enter the lists with many thousands now prospered, and in sections where the climate is not more rigorous than far East ; railway freights reasonable, and well watered, rich virgin acres

seeking purchasers at from $10 to $40 the acre, according to nearness to railways, towns, schools and churches.

In producing milk the East has no rival in the West, and in the manufacture of strictly first-class butter finds a reasonable profit in the choice of cows and by late methods of feeding promising great results, especially under the ensilage system, of which Mr. J. B. Brown, President of the New York Plow Company, says:

"What I enjoy most to think about in this connection, is the increased comfort that it will bring to the animal kingdom, and to humanity everywhere. Eight acres, with this system, will produce as much animal food as one hundred did before. A farmer with twelve children and a hundred acres can divide up his land and give to each of them a farm that will, with a silo, support them and their families as comfortably as the whole farm would with a barn. We are increasing in population with the rapidity of geometrical progression. Ensilage practically increases the size of the earth twelve times at least, without making it inconveniently larger or disturbing the solor system. It is a reservoir of Summer sunshine and Spring showers, improving with age, and is, to a great extent, a preventive of the evils of drouth and famine."

If this is not a rose-colored view, the cows are to be better fed and supply billions of pounds of better milk to the cities, and a surplus of butter and cheese for export, from millions of cows rating better year by year, and far superior to those kept in the newer States, where beef has for years been the great concern in the herd. The corn States *par excellence*, after so full a mention of Iowa, my own State, are well advertised by superior butter made under the creamery system, and the large and model beeves far below the demand. It was deemed public policy to abolish the office of Commissioner of Emigration that there be no haste in peopling our new countries—in their native state grazed to some advantage, and will soon be required under the laws of population, changes of occupation, and the dispersion of children of American families. I only mention the good room remaining in an area of ten millions of acres in Iowa, and an equal amount, with not equal corn adaptation, in Minnesota, Kansas and Nebraska, where the cattle industry has advanced in the last decade equal to 100 per cent., and there is room and promise of even a larger development in the next ten years.

THE DAIRY INTERESTS

have a wide bearing on cattle raising, and no American industry is at this time exciting more earnest attention. A low estimate of our annual product of milk from thirteen million cows is five hundred and twenty million dollars. How can the cows be improved as milkers is the problem in the corn States, and not impair their beef qualities? This finds one answer: select families of the beef breeds that are proven good milkers. The combination of these qualities is possible in a high degree, and is strictly a practical and not a speculative question. Poor milkers, as a rule, lose their owners money, and

have been the great occasion of discouragement in butter and cheese making. Those for sale are often found worthless, and extra stock is cheap at a large price. Statistics show that there has been an increase in revenue from the cow in 1880 over 1870, of $10 a head, which indicates improved stock, better feeding, new methods, and better prices. Creameries are springing up through the Central West, and there are 500 in Iowa alone where ten years before there were none. This plan gives the farmer the benefit of milk for his calves and pigs, the cream being only taken to the factory, where, under a system, with ice, improved implements and good packing, there is a uniform article commanding fancy prices. Good cows are now salable at from $40 to $60 each, for the dairy, while poor ones are not wanted at any price.

The exports of butter and cheese will, on the best foreign authority, continue to increase, if furnished at a moderate price and of superior quality; and the same reasoning applies to the consumption of milk in our towns and cities—a large demand, if at low price to the masses and of unquestionable quality. Good dairying success eastward is more dependent on the milking qualities of the cow. The average one has no record, while the best show great possibilities and stimulate rival owners. I have before mentioned the Holstein cheese cow as giving 18,000 lbs. of milk in a single year, and the Great Cattle Sale of history. It would be a great slight to the Jersey Queen of Barnet as a butter cow if I did not give her record. She is a Vermont cow, originating in the herd of Messrs. Fairbanks & Co., St. Johnsbury. Her milk for 7 months and 11 days weighed 9,069 lbs.—of butter made 555 lbs.; an averge of 50 lbs. of milk daily, and a promise of 800 lbs. of butter for 12 months.

A RESUME OF THE FACTS CONNECTED WITH THE NEW WEST.

I must not omit the late Thomas Carlyle, who, often quoted, said of our country, "The cause of your prosperity, discounting all democracy and political rubbish, is, you have a great deal of land for a very few people." I do not accept this plausible solution of the occasion of our prosperity. Observation and reflection, on the contrary, lead to a far different conclusion. The pioneering of agriculturists for fifty years in this country, and the later adventures of gold hunters for 25 years past, before the era of Western railway building, has been a direct drain on the wealth of the nation, involving losses to those on the frontier, known only through the sad experiences of the pioneer who has all the disadvantages of an invading army far from the base of supplies. His energies are paralyzed and profits reduced for want of that obtainable in the vicinage of shops and stores best eqipped and stocked, where there is competition, and artisans of diverse skill waiting employment. A choice of vocations is not left hundreds of miles distant from consumers of his agricultural products, and the producer in a new State is forced to study a concentration of coarse products into valuable ones which will bear long land carriage.

Hence it was quite natural for Pennsylvania grain growers distant from the ocean to set up distilling whisky, and when hindered to inaugurate, even in the days of Washington, a Whisky Rebellion not of slight moment, and this subdued, they and more Western agriculturists, to regain what was lost, set about stock raising with the great disadvantage of distance from markets, which compelled the raising of cattle that should have as a prime quality limbs for locomotion rather than well rounded quarters for beef. Swine were bred of necessity, not to gain adipose, but for that ability to make long journeys, which furnished such "delectable (?) company" for so many drovers and owners.

Wool was deemed quite too gross a product to be profitably carried to Eastern looms, and bankruptcy often followed the establishment of factories with costly machinery, imported artisans, and a higher rate of interest than in the older States for capital invested.

Thomas H. Benton asserted that every dollar carried from the rich gold mines of the West had cost two dollars, and labor which would have made a rich and fruitful garden of millions of acres, had it been expended on the soil. How statesmanlike, to point out the track of the buffalo as Nature's route for the iron rail to the El Dorado of the West, which evoked an enterprise rich in reward to capital, far richer to the pioneer, and involving a broad statesmanship which now, by the facilities afforded to the miners, and an increased production of the precious metals, gives us that which has been the ambition of all votaries of Crœsus, the honor and profit of distributing the world's exchanges.

Andrew Jackson, fifty years ago, in the rural home of the Hermitage in Tennessee, had no device for farmers, in the isolation of that day, so promising as manufactures, and a tariff protection in their infancy, to develop skilled labor and invite capital. The picture of the poverty and desolation of the pioneer soon became less dismal by the use of the turnpike road and steamboat navigation, but did not raise the last generation to that plane of prosperty, comfort and fiscal possibility now enjoyed, and within reach of the pioneer, through the facilities of the railway for travel and freighting products.

Carlyle, ignorant of the locality of our wealth, could not unfold the secret of its acquisition; found more in saving, in easy exchanges and industry, than in ownership of many cheap acres by unskilled and negligent farmers. He did truthfully say, in a fitting text for a volume on Economies: "There is not an Indian by Lake Winnipeg that quarrels with his squaw that does not affect the price of beaver throughout the world." The converse is true: there is not a successful trapper that does not affect the prices of beaver, nor a wise, painstaking herdsman that does not add to the material wealth of his country by improving stock, and those rare excellences which attract the enterprise and wealth of older countries.

What material concern is greater than the best methods of concentrating gross products into concentrated values? And this is cattle husbandry—turning grasses and grains into nutritious food of the best quality, in the briefest period and at the least expense. Pure milk only will be tolerated; cream butter alone, and no doubtful compound; pure bloods for prepotency and beef above all praise. Thus honor is his shield and ample profits a reward, from the high plane of a gentleman who leaves a legacy to his family beyond comparison. Ignorant of the ways of bulls and bears in the market, by the bovine he earns honest bread, and wins his way from the Herd Book to the page of heraldry. What an escape from the sorrows of an adventurer and the shame of losses in the pools of jockeys. Animal life is a profound study, taken with the study of food, which answers to the fuel for the engine that gives power and secures locomotion. A stomach is an assay institution; and with the laws of hereditary, the study of markets, and with the comities of gentlemen, he rises naturally into a high-toned, original character. The tenants of prisons would be few if drawn only from the ranks of cattle raisers. Tricks in trade would be rare if confined to pastoral life, since there is no idle brain for a satanic workshop. What so common to find as real gentlemen, an eclectic class, moulded by simple habits and elevated association, rich in reminiscence, whether at farmers' clubs, on fair grounds, or on the frontier, where the rude elements of empire are warm and moulding into form.

We should admit our deficiencies, and profit by the ways of older countries. It is plain that we lack cattle in numbers. For our domain, excepting Alaska, we have only one bovine for 61 acres, a paucity in numbers that so stimulated the owners that there was an increase of twelve million head in the last decade, where there might have been twenty millions but for the insane ambition to ship our bulky grains rather than condense their values in meat on our own soil. England has one bovine to eight acres; France relatively fewer—one to twelve acres. Germany, with less than fifty millions of acres, has fifteen million head of cattle, or one to each three and one-half acres.

In carrying out this international comparison, it may be mentioned that Russia, deemed far below our country, has sixteen million horses, twenty-four million of cattle, and ten millions of swine, and fifty millions of sheep. The United States has eleven million horses, thirty-five million cattle, thirty-five million sheep, and of swine thirty-two million—equal to the whole of Europe in *porcine* display and numbers.

The relative number of animals in different countries is suggestive at once of what our country lacks, and of its possibilities. None has such varied favoring temperature for the bovine; none so wide an expanse unoccupied, for our area is one-third greater than that of Russia; and none in its newer sections equal railway facilities with ours.

One hundred millions of cattle can be kept with equal profit in our coun-

try to the twelve millions in our sister Republic, France—then allowing us one bovine to twenty acres, while by the last census we have for each of the animals, horses, cattle, sheep, and swine, not less than fifteen acres.

These approximate numbers from the latest authorities, home and foreign, show that during the last decade our relative gain was greater than that of any country, and far exceeded that of any period of our history.

The views of European statesmen, and the reports from our foreign ministers and consuls, taken with American agricultural literature in the magazine, and newspapers, show the wide and deep interest taken in animal industry, enlisting mind and capital hitherto dormant, and this with good reason, substituting care for the toil of the grain-raisers; a measure of certainty for the chances and vicissitudes of trade, blending the thought of the breeder and feeder with those attentions consonant with social elevation and refinement; dealing with animals that, amid the wasting of years and blotting out of empires, have in their assertion of self-perpetuating, tenacious life, improved during the vicissitudes of four thousand years, becoming in every succeeding grand epoch more a necessity to their masters related to wealth, æsthetic culture and happiness. Even Iowa, during the life of a single generation, has acclimated and fed brutes of more cash value than all the flocks of Kedar, the horses of the Pharoahs, and the cattle depastured on a thousand hills; and this era of banks, steamers, railways, and progress, has furnished nothing more replete with interest, or more intimately blended with individual aspiration and a just State and National pride.

How grand is the question—broader than the schemes of diplomat; of more consequence than the policy of the Secretary of Finance or appropriations of Congress. That we may be more fully impressed with the nobility of our rank attainable, waiting for success on earnest and honorable endeavor, I only hint at the breadth of the stock breeder. He must be a financier, not risking his all on an animal with paper promises so large with attorney fees that a poor crop or money panic will force his stock under the hammer. Our fiscal sails must be set for all seasons and spread regarding money resource and time, which matures stock as well as roses, never forgetting Poor Richard,

> "Boats large may venture more,
> Little boats near the shore."

A successful breeder has an artist's eye. He is to blend the beauties of each—to form the ideals at once captivating to the refined taste and in adaptation of superb qualities.

Bovine bloods have points for the dairy and for the shambles, and the artist blends forms in accordance with correct taste and utility. The horse has muscle for the plow, draft, and for the road; and a glance indicates the qualities of each in endurance and fleetness; and to bring forth the blending

beauties of breeds, captivating to a refined taste and of superb qualities, unchallenged as the animals in Rosa Bonheur's classic pictures, is our study; and this requires the keenest perception to espy defects, bold treatment and consummate skill in combinations where temper, style, muscle and bone may be bred in or out

Hence an Artisan rearing animals for the world's great markets, whereof the buyers are critical, capricious and exacting, has a graver task than that of Reubens, for the painter may recolor the canvas at will, more delicate in effect than that of Canova; he could at the next breath chisel the marble anew, while deformity in fold, herd, or stud courses in the blood corrupting many generations. We are creators under the laws of hereditary, and nothing less is becoming as citizens than an ambition worthy of knightly honors, earned by a Bakewell in the fold and a Booth and Bates in the herd.

Our people are keen in invention, fertile in resource, and cherish a laudable ambition to rival princely owners in the purity of bloods and the excellence of beeves. The long desired fraternal spirit is obliterating sectional lines and blending in pleasing harmony sections and States alienated by war, to be materially profited by the National family of 1900 *Anno domine*, numbering prophetically 100,000,000 of people, and owners of 100,000,000 of the bovine races.

In concluding this discussion it is fit that I should remind the reader that matter ample for a large volume has been condensed to the compass of a magazine article, which will explain the reason for so brief a discussion of many aspects of this great question. I should be derelict in duty not to express my obligations to all persons who have by letter, facts of experience or opinions contributed to the value of this paper. If strong language has been used in regard to oleomargarine, it was in the interest of the humble dairymen, and in reprobation of the devices of the sordid compounders who nauseate the innocent at the table, imperil health, and corrupt the very fountains of the streams which enrich by legitimate trade.

Our frontier herdsmen would not forgive an omission of the Indians in their cognate relation to cattle industry; and if I may lesson the tales of border horrors by a calm discussion which will break up the tribal relation, mass our dusky wards, and by the presence of woman lessen the vices which now obtain in rude nomadic society, and save the savage from a lazy life and degeneracy, in a new departure where the conditions of comfort and protection are toil and obedience to the laws of civilized life, a seeming digression will be pardoned.

I shall have failed in my main purpose, if the opportunities afforded by the railroads for reaching our natural stock country have not been set forth sufficiently strong to stimulate many aspiring youth to take a deeper interest in cattle husbandry, and lead to the blending of their fortunes with those who would make the Newer West so attractive that

"Heaven shall look down to see."

Wonderful growths, increased home and foreign demands for beef, great stock sales and immense gains, I place *secondary* to an elevating employment, found on rich pastures in healthful climes and in the presence of grand scenery, moulding thought and life, where it is as honorable to earn a fortune as to gain it by inheritance.

Save in time of war or the period of depreciated currency, good stock has not reached so high a price as it brings to-day, and no period can be cited in the world's history when the labor of hand or brain promised more in results for brave and beneficent purposes; thus inciting those restless and aimless and weary with traffic to emulate the votaries of the herd in closing their career with generous comity and their hearty good deeds, which will please their children to recount, and their fathers to remember—an exemplary legacy—in the gathering shades of life's evening.

CATTLE IN THE UNITED STATES BY CENSUS OF 1880.

We are indebted to Mr. J. R. Dodge, Statistician of the National Agricultural Department, for the following table, never before published:

States and Territories.	*Working Oxen.*	*Milch Cows.*	*Other Cattle.*	*States and Territories.*	*Working Oxen.*	*Milch Cows.*	*Other Cattle.*
Maine	43,049	150,845	140,527	Ohio	8,226	767,043	1,084,917
New Hampshire	29,152	90,564	112,689	Michigan	40,393	384,578	466,660
Vermont	18,688	217,033	167,204	Indiana	3,970	494,944	864,846
Massachusetts	14,571	150,435	96,045	Illinois	3,346	865,913	1,515,063
Rhode Island	3,523	21,460	10,601	Wisconsin	28,762	478,374	622,005
Connecticut	28,418	116,198	92,149	Minnesota	36,344	275,545	347,161
New York	39,633	1,437,855	862,233	Iowa	2,506	854,187	1,755,343
New Jersey	2,022	152,078	69,786	Missouri	9,020	661,405	1,410,507
Pennsylvania	15,062	851,156	861,019	Kansas	16,789	418,333	1,015,935
Delaware	5,818	27,284	20,450	Nebraska	7,234	161,187	590,129
Maryland	23,246	122,907	117,387	California	2,288	210,078	451,941
Virginia	54,709	243,061	388,414	Oregon	4,132	59,549	352,561
North Carolina	50,188	232,133	375,105	Nevada	765	13,319	158,137
South Carolina	24,507	139,881	199,321	Colorado	2,080	28,770	315,989
Georgia	50,026	315,073	544,812	Utah Territory	3,968	22,768	58,680
Florida	16,141	42,174	409,055	New Mexico Terri'y	16,432	12,955	137,314
Alabama	75,534	271,443	404,213	Washington "	3,821	27,622	103,111
Mississippi	61,705	268,178	387,452	Dakota "	11,418	40,572	88,825
Louisiana	41,729	146,454	282,418	Idaho "	737	12,838	71,292
Texas	90,603	606,717	3,387,967	Montana "	936	11,208	160,143
Arkansas	25,444	249,407	433,392	Arizona "	984	9,156	34,843
Tennessee	27,340	303,832	452,462	Wyoming "	718	3,730	273,625
West Virginia	12,643	156,956	288,845				
Kentucky	36,166	301,882	505,746	Total	1,010,402	12,580,907	22,501,545

Grand Total 36,093,854

DAIRYING AND DAIRY IMPROVEMENTS.

Attention has frequently been called to dairying as one of the most profitable and agreeable branches of farming. Between the years 1870 and 1880, its development was equal to that of any other agricultural pursuit, but the same degree of interest does not seem to have been taken in it since then, that should have been, by those who desire to reap the best result from their labor and accomplish the greatest success in their undertakings. General farming has proved so satisfactory to those engaged in it, by reason of short crops abroad and high prices, that the inducements offered to the milk producer have been somewhat overlooked. There has, of course, been the usual amount of butter and cheese made, and, perhaps, an increased quantity of each, but a larger production would have paid. It is noticeable that our exports of these products, instead of increasing last year, declined some fifteen per cent. This is accounted for by the fact that there was an increased home demand, which was an excellent thing; but we should make enough butter and cheese to supply the home demand, great as it may be, and largely increase our exports besides.

While the production of grain and beef has been profitable of late, we must be prepared to face lower prices abroad, as the promise of good crops everywhere is now excellent. Grain raising having become almost a mechanical industry, and beef production unusually stimulated by the prevailing high prices for meat, these will naturally become unremunerative shortly; and those who are in the right locality for dairying will serve their best interests, and pursue the part of wisdom, by adopting dairying where it is practicable. And on what grounds, it will be asked? Because there never has been, and never will be, too much fine butter or too much fine cheese made; because it is not only a profitable and cleanly business, but dairying, instead of depleting the soil and impoverishing it, constantly enriches it; because it increases intelligence and good morals, and hence good government. The present dairy sections of the United States are the richest, most fertile, and the people the most thrifty and intelligent of any other.

By the census of 1880, there was shown to be 12,600,000 milch cows in the United States, but there are nearer 15,000,000. These, besides supplying milk for family use, both in the city and country, produce from 350,000,000 to 400,000,000 pounds of cheese, and between 1,200,000,000 and 1,500,000,000 pounds of butter annually. To sustain this number of cows on the old system of feeding, it takes about 50,000,000 acres of land. Under the new system, that of preserving green fodder by ensilaging it, it is within bounds to say that the same land will sustain 40,000,000 head. It will be asked, where could a market be found for such quantities of butter and cheese as this number would produce, or one-half of it? In the first place, if the right kind of cheese be made, millions of pounds will be consumed in this country, and the remainder may easily be exported; and of butter we could export even a larger quantity than the surplus of this production would be, if we furnished a fancy article and had all the trade of England and the other countries which import their butter; and with the great improvements in both the inland and ocean transportation facilities, it is now possible to ship butter in refrigerators from all parts of the United States to the principal ports of Europe.

Within the past five years the average quality of butter has improved from 25 to 50 per cent., on account of the extension of the creamery system, and the home consumption has increased in proportion as the masses could get good butter. Not only this, but people who were accustomed to good butter eat more now when they get a still better article.

It will be suggested that all sections are not adapted to dairying. This is true, but the old idea that the territory in which it could be successfully practiced was limited to a small territory extending across the State of New York, Western Pennsylvania, Northern Ohio, Southern Michigan, Northern Illinois, Southern Wisconsin and Eastern Iowa, has been exploded. Dairying can now be successfully prosecuted wherever good milk can be produced and ice obtained; and good milk can be made wherever Indian corn can be grown; and ice can be gotten almost wherever the railroads or steamboats can go; and, besides, it can be made anywhere by an artificial process. Of course, we will not say that fine butter can be made in the extreme South, but it can be made almost in every section of the country, with the improved machinery and methods now in vogue. As is well known, as fine butter is made in Iowa as is produced anywhere, and few districts surpass Wisconsin for fine cheese. The industry has already extended hundreds of miles westward within twenty years. The Blue Grass country of Kentucky is probably as fine a section of the Union for dairying as there is, covering hundreds of thousands of acres, and yet undeveloped so far as this industry goes. Iowa has more creameries now than any State in the Union, while ten years ago she did not have one. Five years ago the first was built in Eastern Pennsylvania; now there are one hundred and fifty east of the Alleghany Mountains, in that State; and New England, where the dairy system of the country originated, has begun to adopt the system.

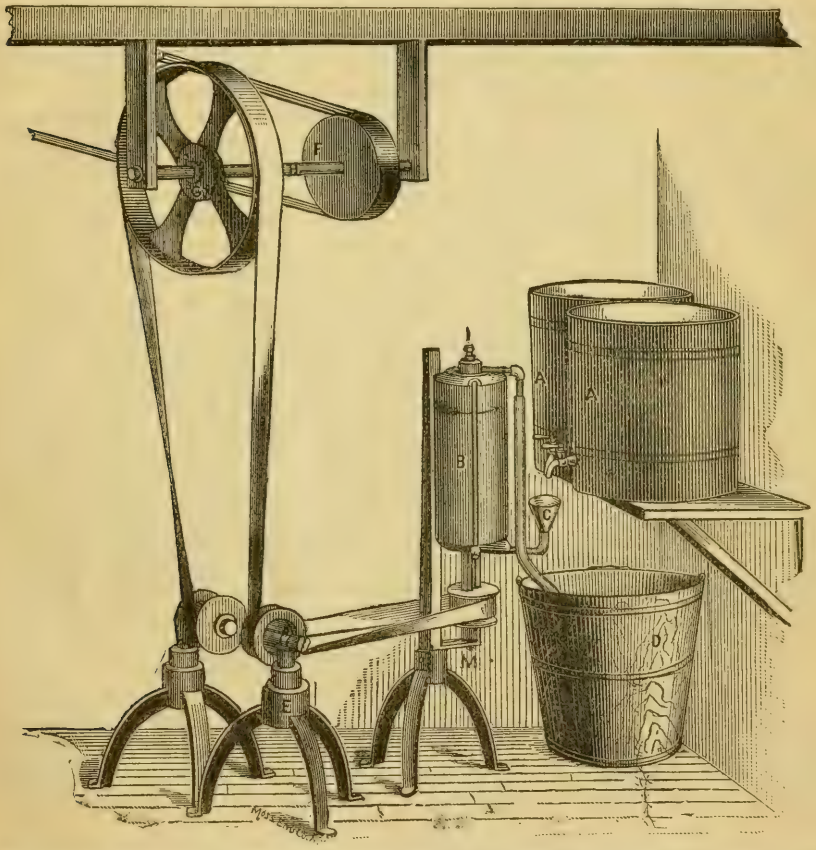
Herkimer County, New York State, is the seat of cheese making in the United States, and the birthplace almost of the industry on this side of the Atlantic. Extending from the Adirondack Mountains on Lake Champlain to and across the Mohawk River on the south, it lies about seventy-five miles west of Albany and two hundred and twenty-five miles east of Buffalo, the New York Central and Hudson River Railroad and the Erie Canal both running through it from east to west; the northern part mountainous and almost as wild as when the first white settlers came to the region in 1792, whilst the southern section, embracing but a small portion of the country, though hilly, is most fertile, and in a high state of cultivation; the farms in the highest condition, and the herds well kempt and sleek.

It is a strange fact that dairying was only adopted here, as it has been in so many other localities, after grain farming had been tried and found unprofitable. Five years ago, traveling in Northern Iowa and Southern Minnesota, the writer was met with the suggestion, in that supposed new country, that the farmers must take up dairying for grain production as the latter had seen its day. A connection of Mr. N. Easterbrook, one of the most popular men of Herkimer County, and one of the best informed, raised grain in the early days and carted it to Albany, until his farm became so exhausted that he was compelled to take up dairying. He was glad to get four cents a pound for his cheese; now it brings ten at the same place.

The first cheese was made in Herkimer County (according to that excellent authority, Hon. X. A. Willard, one of the leading lights of the dairy industry in America, and to whose intelligent efforts its development is due as much as to any man in America) in the year 1800. For many years it continued the chief producing section of the Union. As early as 1812–16, says Prof. Willard, there were herds numbering as many as forty cows, which is yet a good-sized dairy. In 1826 the business began to take root in the adjoining counties. The implements were very

crude, the milking was done in open yards, and milking barns were quite unknown. The milk was set in wooden tubs, the curd cut with a long wooden knife, and broken with the hands. The cheese was pressed with log presses, standing exposed to the weather. They were made thin and small, and held through the season instead of being disposed of within about thirty days from the time they were made, as at present. When ready for market they were packed in rough casks and shipped to different localities for home consumption. Up to 1840 but little improvement had been made either in the methods of farming or cheese making, but in that year the farmers had become so prosperous in dairying that they began to pay more attention to the care and management of stock, and to improve their breeds. About this time the first dairy steamer for making cheese was introduced, and a few years later the presses were improved. Prices were four to six cents per pound. Between 1852 and 1860 the business of cheese making began to assume formidable proportions, and prices advanced to seven and nine cents per pound. The farmers had begun to grow wealthy, and the country was much improved. In 1857 the factory system was introduced by Mr. Jesse Williams of Oneida County—the adjoining one to Herkimer—but it was not generally adopted until 1860; so that the cheese factory dates back but twenty-two years practically, and yet what a growth. There are now probably one hundred and fifty cheese factories in Herkimer County alone, and over three thousand in the United States. With the rapid development of the dairy industry, there has been a corresponding improvement in the methods of manufacturing both butter and cheese, and in the implements used. The wooden tub and log press for cheese have been superseded by machinery adapted to the manufacture of the best cheese by the easiest methods; and the old dash churn, and its contemporary implements in butter making, to numerous improved machines. The factory system has taken the place of dairy-made butter in many sections, while in most districts superseding dairy-made cheese. The system has advanced the average quality of each many per cent., and has proved a great boon, not only to the consuming public but to the dairymen, as the product brings a much higher average price. While, however, there has been great improvement in cheese making, there has has for some years been a large quantity of inferior goods made, and they have kept the home consumption as well as the export outlet much smaller than what they would have been had all been of good quality. Some have been poor from natural causes; but the chief reason for bad cheese has been the manufacture of skimmed cheese. Factories which were distinctively cheese factories practiced what is known as half-skimming; and others making a special business of manufacturing butter worked the skimmed milk up into cheese. The former sold for a price ranging from one-half to three-fourths the price of full milk cheese, and the latter from one-fourth to one-half. This has given an increased quantity of fine butter, but it has been at the expense of the cheese interest. The effect has been most injurious to the sale of our cheese, not only abroad, where we depend upon a market for a third of our entire production, but upon the home consumption, which is not a third of what it should naturally be. Skimmed cheese has been sold to such an extent as to disgust every one who eats them, and to prejudice the people against all kinds of cheese. The South, which was a large customer for cheese, has become so disgusted as to declare against buying cheese made in certain districts because of their reputation for skimming. And they are right. Skimmed cheese, as generally manufactured, is not fit for food; and the sooner the people refuse to buy it the better. It is estimated that fifty to sixty million pounds of these skimmed cheese are made annually in the United States. They are unprofitable both to the producer and consumer. It is a fact that we need all the fine butter that can be made, and

all the fine cheese. To make the butter as cheap as possible, the skimmed milk must be utilized, and under proper conditions it can be made into a fine cheese, whereby twenty-five to thirty-five millions of dollars may be saved to the farmers of this country annually, even on the present number of cows, and the public supplied with an excellent article. This we say after careful and thorough investigation of the system. It is by the substitution of pure sweet animal or vegetable oil for the cream taken from the milk, and used to make butter. A few weeks ago we made a critical examination of factories employing the system, and of the product, with the light of many years' experience in the dairy business and handling cheese, and saw



as fine an article made under it as the best full cream factories will average. The cheese was solid, fine in texture, clean-flavored, and possessed of thorough keeping qualities. We saw at the same time report of sales made in New York at the regular market price for full cream cheese. Indeed, the quality was above the average of full cream cheese. This was owing in part to the skill of the maker; for, while the goods were as fine as full cream, there is no reason why they should be better.

It is enough to say they were as good. Following is the result of one week's work with the artificial cream machine in five factories, for the week ending June 13, in Herkimer County, N. Y.:

NEWVILLE BRANCH.—$22\frac{54}{100}$ pounds of milk to one pound of butter, and $11\frac{89}{100}$ pounds of milk to one pound of cheese. NEWPORT BRANCH.—$25\frac{97}{100}$ pounds of milk to one pound of butter, and $11\frac{81}{100}$ pounds of milk to one pound of cheese. COLD BROOK BRANCH.—$25\frac{21}{100}$ pounds of milk to one pound of butter, and $11\frac{83}{100}$ pounds of milk to one pound of cheese. EUREKA BRANCH.—$25\frac{88}{100}$ pounds of milk to one pound of butter, and $11\frac{55}{100}$ pounds of milk to one pound of cheese. MIDDLEVILLE BRANCH.—$25\frac{57}{100}$ pounds of milk to one pound of butter, and $12\frac{85}{100}$ pounds of milk to one pound of cheese.

The system consists of a machine as per the above illustration. B is a cylindrical machine, inside of which is a cylinder fitting closely to the sides, driven by a belt under the bottom, run by steam or horse power, and at a very high rate of speed. Into this is conducted a third part of pure sweet vegetable or animal oil to two parts of sweet skimmed milk, from vats A A, each heated to a temperature of 135 degrees. It comes out into the receptacle at the bottom a pure, rich, perfect cream. The machine coats each little globule of oil with milk, thus making the artificial cream, which sours the same as natural cream and can be churned into butter likewise, producing a fine quality. This is introduced into the milk previously skimmed 24 and 36 hours, with all the cream practically out of it, $1\frac{1}{2}$ pounds to the hundred pounds of milk. The heat is at once turned on the same as in the ordinary manufacture of cheese, and the rennet poured in. The artificial cream becomes at once thoroughly incorporated with the milk, the coagulation takes place, and the entire process is the same as in the regular manufacture of cheese, except that the buttermilk is returned to the vat of skimmed milk just as the artificial cream is introduced. It is the most perfect and successful operation we have ever seen, and the entire results are most satisfactory. We do not hesitate to say that every cheese manufacturer who makes butter, whether he be what is known as a cheese factory man or a creamery man, should adopt this system, providing he can get pure sweet oil and will take proper pains with his work. It is destined to create a revolution in cheese making. It will put money into the hands of the factory man and the farmer, and prove an inestimable boon to the consumer. It is, in fact, the most important and useful invention of the age. On the day we saw the system exemplified, we partook of ice cream, in company with a number of leading gentlemen of Central New York, made from the artificial cream, which could not be detected from the natural article. It was perfect. That was the severest test it can ever be put to. Samples of the cheese manufactured by this process were sent Henry M. Jenkins, Esq., the honored Secretary of the Royal Agricultural Society of England, who distributed them among prominent members of his organization. They were submitted to the most critical tests and stood them all. The *Agricultural Gazette* of London, one of the most influential agricultural papers published, speaking of these cheese, a sample of which was shown the editor by Mr. Jenkins, says:

"Mr. Jenkins was good enough to send us the other day two samples of American cheese—both of them sweet and pleasant to the taste—one orange colored, close in texture, lacking the frequent large cavities; the other, white or cream colored, friable, of good texture, and not to be distinguished from a fair Cheddar cheese. They were both free from bitterness, and the latter one was particularly well tasted. We should expect to have had to pay ninepence or more a pound for it, and perhaps eightpence a pound for the other, in any grocer's shop. That anyone can expect or even wish to discourage the introduction into this country of such capital food as the American farmer thus offers us is impossible."

The *Little Falls Journal and Courier*, a leading dairy paper, commenting on the same cheese, said editorially:

"Time and again in the history of Herkimer County, our farmers' incomes have been cut down from one-quarter to one-third for the season, simply because they have made in the Spring, from skim milk, cheese of so poor a quality that no one could continue eating it until it was consumed; and so every poor cheese sold has stopped the consumption, in whole or in part, and prices have been forced down for fine goods, when, if there had been no poor ones sold, cheese would have been quickly eaten and more demanded.

"It is estimated that 500,000 poor skim milk cheeses are manufactured in this country annually, and that each one of these prevents the consumption of three to five good ones, simply by being in the way; in other words, if no poor, unpalatable cheese of any kind were made, we could manufacture one billion pounds of cheese, instead of four hundred millions, and receive higher prices than we have heretofore.

"It seems that science has solved the problem, and that skim milk can now be utilized in making good, palatable, healthful cheese, by adding to each 100 pounds of milk one and one-half pounds of animal, or vegetable oil, by first making an artificial cream, then putting it into the mass of milk and treating same with rennet, &c., in the usual manner. Both of these oils named are used every day by nearly every family in the land, and we do not see why they should not be used in cheese, as well as for cooking, &c.

"We submit to the thoughtful attention of dairymen who use the skimmer every Spring, and who have then made poor skim milk cheese unfit to eat, whether it is not best to adopt this new system and thereby increase the consumption of cheese and also promote higher prices; for poor grades always drag down the prices for fine."

DAIRY IMPLEMENTS.

In dairy implements the newest and most valuable improvement is the double or twin creamer for setting milk. It is shaped like an ordinary cheese vat, is arranged for cooling by a system of pipes running around the vessel between the framework and lining, with the addition of a tin partition running longitudinally through the center, in which piping for cold water to pass through is also arranged. This increases the cooling surface nearly thirty per cent., and constitutes the vat the best of any yet offered to creameries and factories for keeping milk the longest, and securing large yields of cream. Its capacity is 3,000 to 4,000 pounds, each compartment accommodating 1,500 to 2,000 pounds of milk.

Another most valuable improvement is an ice arrangement for cooling milk. The same kind of a chest or vat is used, but in place of pipes there is a tin basin, or trough, made in the shape of a V, which is filled with ice and set in the milk and covered. This system secures the largest yield of cream of any invention yet introduced, and raises all the cream within twelve hours from the time of setting it.

Proprietors of factories have long suffered for the want of a butter worker that would handle the largest quantity with the least expenditure of labor, and as the size of factories have increased the manual labor has become the more expensive and irksome. It is no small chore to work 100 pounds of butter by hand in addition to the other work the butter maker has to do about a factory, but when it comes to three to five hundred pounds per day it is a most difficult task, while in a number of factories in different sections still larger quantities are made. A power butter worker has therefore become a necessity to the larger manufacturers. One has recently been brought out, and it does its work perfectly. It manipulates twenty-five pounds at a time, and has a capacity of 6,000 pounds per day. We have seen it tried and have no hesitancy in pronouncing it a success.

For cheese making the newest improvement is a circular cheese vat, which cuts the curd, agitates the milk, and salts the cheese by machinery of a very simple kind. It is not only a perfect vat but a great labor saver. There are three sizes: 5,000 pounds, 8,000 pounds and 12,000 pounds. It does the work even better than it can be done by hand, and is in all respects reliable. This we have also seen tested.

Little Falls, a beautiful village on the banks of the Mohawk River, is the principal town in Herkimer County, and as that county is the parent of cheese making, Little Falls is the progenitor of cheese marketing. Situated on the side of a hill, with the river running through its center, it is a noted picturesque place, and from any point the finest pastoral views to be seen in America may be witnessed. Its streets are clean and well paved, and the buildings, including the stores, warehouses and private residences, have that substantial, bright, wholesome appearance to be expected where dairying is the chief industry. No place of its size anywhere is nearer a model town. Containing about seven thousand inhabitants, it supports several manufacturing establishments, but its prominence is solely as a dairy center, and its proud position as the chief dairy market of the world is apt to be maintained if Utica and Elgin do not make too rapid strides.

In 1861, the Little Falls cheese market was established, dairymen coming to town on certain days of the week, and there meeting buyers from New York and other places; on some market days, as early as 1864, hundreds of farmers could be seen on the streets with their wagons loaded with dairy cheese, and buyers from the principal cities of the country purchasing their product. Between 1864 and 1870 the market attained a still greater popularity. the *Utica Herald* beginning a system of weekly market reports. As many as three hundred salesmen from different factories attended the market in addition to the private dairymen, and the reputation of the quality of the cheese became world-wide. In 1871, the celebrated Little Falls Board of Trade was organized. It was the first established in this country and led to the organization of others, until now there is one in every important dairy section of the Union. Hon. X. A. Willard was the first President of the Little Falls Dairy Board of Trade.

To Mr. Harry Burrell, now deceased, the development of the dairy industry in Herkimer County, the popularity of its cheese, and the wide reputation of Little Falls, is perhaps due more than to any other one man, and consequently the spread of the dairy industry throughout the West and the good name of American dairy products. In 1826 Mr. Burrell began buying cheese, shipping to New York, Philadelphia and other markets. In 1830 or 1832 he opened a market with England, and from that time until his death, three years ago—when, at the age of eighty-one, he passed away—he continued a regular exporter, shipping in his last years a thousand boxes a week. Mr. Burrell became the leading buyer of cheese in the United States. As the production of cheese increased and extended, he entered the new fields, having agents in all sections, and for many years a branch house in New York. His purchases aggregated many millions of dollars, and his operations extended over a vast territory. A large percentage of his business was done through others, but he always retained the confidence alike of factory men, agents and his customers, both at home and abroad; so that Harry Burrell's word was always good, and no man ever had just cause of complaint. A man of keen judgment, wise foresight, strict integrity and grand enterprise, he succeeded as no man has succeeded in the dairy business, dying honored by all who knew him, the possessor of an ample fortune, and leaving a family of sons who had been trained by him, in his business alike respected with their father—David H. and Edward Burrell; the former known from one end of this country to the other, and in every dairy section of the world—in the United States the most popular if not the best-informed man having to do with the dairy and its products. At his death Mr. Harry Burrell was the owner of some fourteen of the finest dairy farms in New York State.

With the growth of the dairy industry, and the increase in the manufacture of cheese and butter, came a necessity for constant improvement in dairy imple-

ments and machinery, and a business in dairy supplies followed. In 1870 Mr. David H. Burrell associated himself with Mr. R. S. Whitman for the sale of such articles as were needed by cheese and butter makers. Their first year's business amounted to $44,000; the next year it was $63,000; eight years later it had grown to $350,000. Mr. David H. Burrell attended to the practical part, going in person to the factories and putting up the apparatus, until, a few years ago, they secured the services of Mr. George Freeman, who has since taken charge of that branch of the business, and who is known to a great many cheese and butter factory men in the State as a competent and reliable man. The business of the firm, by industry, enterprise and wise management, continues to grow, and now amounts to a large sum, considering the low prices of most of the goods dealt in. The firm now have a fine, large warehouse, four stories high, on a principal street in Little Falls, and are the largest dealers in and manufacturers of dairy supplies in the world, their business extending into all parts of the United States and Canada, and finding markets for their goods in Europe, Australia, and every country where butter and cheese are made. They supply every article used in the dairy, cheese factory or creamery, and control the patents of all the best implements and machinery, including that of the machine for the manufacture of the new process cheese, the Gang Presser, Twin Creamer, Ice Creamer, Power Butter Worker and Circular Cheese Vat, before described. They handle not only everything for the dairy, but the best articles, and give a guarantee against infringement of the patent on every patented thing they sell. The present members of the firm are D. H. Burrell and Walter W. Whitman, and there are associated with them Clarence Van Vecten, Geo. W. Searls, Merrick Freeman and Barry Pomeroy; and to the enthusiastic support given the firm by these gentlemen, Messrs. Burrell & Whitman attribute a large measure of their success.

This firm, besides making vats and the hundred ordinary articles used in the production of cheese and butter, manufacture the Gang Presses, Cheese Box Hoops, Seamless Bandage, Cheese Boxes and Butter Tubs, having factories at Rome, New York, and Detroit and Trenton, Michigan, in addition to their own establishment here. There are at least five hundred men constantly employed in the manufacture of the different articles which they sell.

The Annattoine, sold by Messrs. Burrell & Whitman, is a most valuable preparation.

For trying their machinery and implements, Messrs. Burrell & Whitman have an experimental cheese and butter factory, where everything they offer is first tested, and nothing is sold that they cannot recommend from actual trial. This saves all risk of loss to the factoryman and his patrons.

With this firm, and particularly with the senior partner, Mr. David H. Burrell, we have enjoyed an acquaintance of many years. He justly occupies a high position amongst the dairy farmers of the whole country for intelligence, enterprise and fair dealing. Still a young man, he enjoys a degree of confidence and popularity of which any man might well be proud.

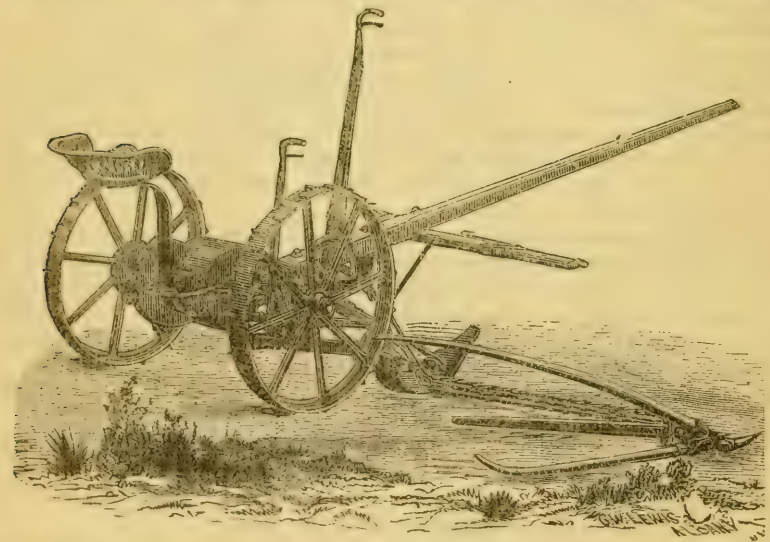
The business of his firm is conducted on the fairest principles and upon the most advanced methods. Enterprise and industry are impressed on every branch of it, while they will sell no article that they cannot recommend. They are the sole owners of the patents for the manufacture of the new process cheese, and the only manufacturers of the emulsing machine; and before offering either they have carefully, and at large expense, tested their usefulness. We have such thorough confidence in them, that we will cheerfully give all particulars about them desired.

J. H. REALL.

PUBLISHER'S DEPARTMENT.

A GREAT MANUFACTURING ESTABLISHMENT.

In one of the most beautiful and fertile parts of the great Mohawk Valley, New York, is the thrifty town of Ilion, with a population of about 7,000, where scarcely forty years ago there was but a single house. The town lies west of the New York Central Railroad, at the base of the hill, with the Erie Canal running along its east line. The part of the valley in which it is situated is scarcely a mile wide, but the hills slope gently, and on their sides and summits are rich dairy farms. Indeed, so largely is the section devoted to dairying that scarcely an acre of plowed land is to be seen from the villages. This cheerful place, with its well laid out streets, numbers of comfortable residences, well kept lawns, shaded driveways and fine churches and schools, is the outgrowth of a single manufacturing



establishment, and upon which its prosperity yet rests—that of E. Remington & Sons, the great firm of agricultural implement, gun, sewing machine and type writer makers. The business was established by Mr. E. Remington at about three miles above Ilion. He removed his works to the latter place, and at his death, when his sons Samuel, Eliphilet and Philo had become members of the firm, it was the largest gun making establishment in the country, a position it still occupies. It has a capacity of over 1,000 stand of arms per day, and furnishes the leading governments of the world. At the breaking out of the Rebellion it declined orders from the South accompanied with the cash, through its loyalty to the government, whilst other manufacturers filled all they could get. The firm suffered a great loss of business thereby, which, on account of its large investment, involved a serious loss, but they were true to their principles whatever the sacrifice. Subsequently they received large orders and recovered their losses. Within the past few years the manufacture of agricultural implements, sewing machines and type writers has been conducted by the Messrs. Remington on a

large scale and with superior facilities. Their entire works cover five acres of ground, and when running to their full capacity employ 1,800 hands. The firm have a national reputation for probity and for the superiority of their manufactures, and their agricultural implements are known everywhere. Mr. Samuel Remington, the President of the Company, which is a stock concern, takes a deep personal interest in practical agriculture, and owns what is destined to be one of the best farms in the State, and which has upon it the best system of farm buildings, including a cheese factory and creamery, in the country.

In the present issue of this journal a full article is published on Mr. Remington's farm, describing it in detail. It possesses points of peculiar interest to every farmer in the country.

In the agricultural implement department, the Messrs. Remington have introduced a new plow, which is revolutionizing the system of breaking up the ground. Speaking of it, the *Rural New Yorker* said, a short time since:

"The value of advertising in the *Rural New Yorker* was never better illustrated than in the recent advertisement of the New Remington Clipper Plow. Within about ten days after the appearance of the advertisement the manufacturers received over 500 letters of inquiry for further information and prices. This proved two things:—1st. The value of the paper as a medium of communication with the farmers and dealers. 2d. That there is a popular demand for a lighter and better plow than the Chilled Plows which have until now been so popular. Everything is said to have its day, and this seems to be true of the Chilled Metal. The New Remington Clipper Plow is made of Carbon Metal ('the hardest and toughest metal ever put into a Plow'), which is largely composed of steel, and it is not heavier than the ordinary steel plows. This, together with the fact of its improved form, being the last and best of all the inventions, makes it lighter for the team and steadier in its work than any other. Now *this* is just what the farmers want, and what the agricultural community is looking for. The New Plow is handsomely finished. To the practiced eye of the plowman it *looks* as if it would indeed do all that it is warranted to. The manufacturers make a superior Carbon Share, which is undoubtedly without its equal for hard wearing qualities."

The Remington Improved Mower, manufactured by the same firm, is likewise attaining a great popularity. It is simply constructed, strong and durable, easy of draft and management, and a model of beauty and cheapness. Their sulkey rake is automatic, self-discharging, and can be thrown in or out of gear at any height or worked by hand without change.

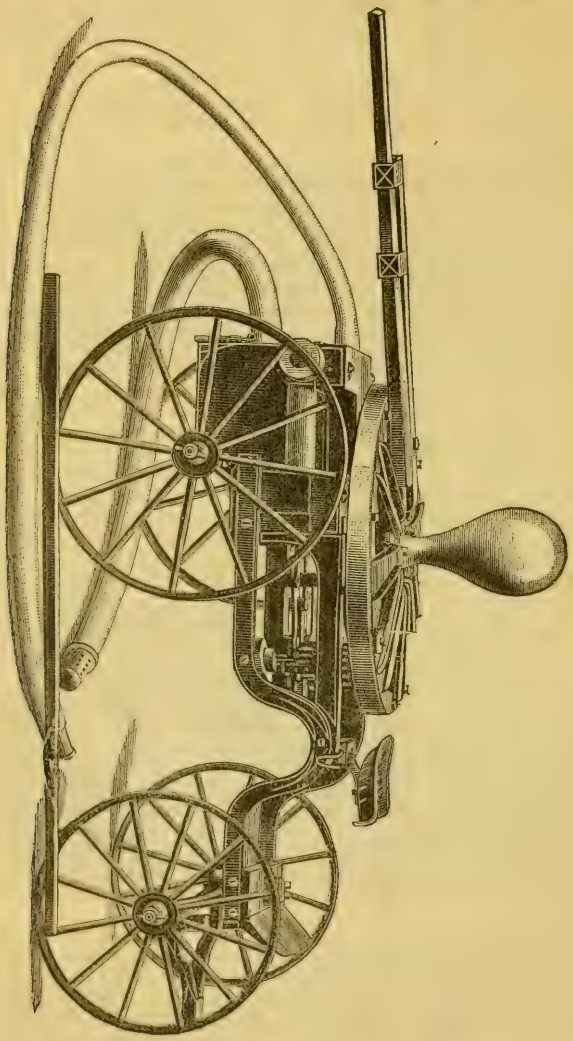
The Remington Company also manufacture shovels, scoops, spades, garden rakes, hay forks, manure and spading forks, and potato and manure hooks.

Messrs. Remington & Sons were the originators of the type writer, an instrument which no business man can afford to be without. It is unquestionably one of the most useful inventions of the age, and is fast superseding the pen in correspondence and composition. Not only is it less laborious than the use of the pen, but it will do a third more work, and when done it has the great advantage of being as readable as print, thus saving many errors and much annoyance. The type writer is now in use in all the principal commercial houses, banks, insurance companies, railroad and newspaper offices in the country, and is largely used by authors, ministers, and all having writing to do. From personal experience we can testify to its great utility.

The sewing machine made by Messrs. E. Remington & Sons is one of the best manufactured, and is deservedly popular wherever used. It embraces all the points of excellence of any other machine, and is more reasonable in price. It makes a beautiful and durable double-thread lock stitch, suited to every description of work. It uses all kinds of thread, and sews with facility from the finest to the heaviest material. The silence and smoothness of the motion is positive proof that it will continue to run for years without expense. By the new and peculiar movement of needle and shuttle and thread-controlling parts, there is less wear or strain on the thread used than in other machines. The thread being set in the material uninjured, the work is therefore better and stronger than that done on any other machine.

One of the most valuable of the many useful things manufactured by Messrs. Remington & Sons is the new horse-power fire-engine. It has the same power for throwing water a long distance as the steam fire-engine, with the advantage of being adapted to horse or man power instead of steam. The levers are on top of the machine, and work in circular form, and can be propelled either with men or horses. It does the same work as a steam-engine, is always ready for operation,

does not get out of order, or require the service of an engineer, and sells at half the price of the steamers. They are peculiarly adapted to villages, and would prove the best kind of an investment for every town in the country, however small, that



it could make. With one of these engines there need be no such destruction of property and of whole villages, as has often taken place. Farmers with expensive buildings should have one on their premises, and every manufacturing establishment needs one.

THE KEMP MANURE SPREADER.

One of the most useful and valuable machines used on the farm is Kemp's Manure Spreader, and it is something every farmer should own, and which the most progressive ones have already secured. We have seen it on some of the best farms in America, and find everybody warm in their praises of its value. Amongst those who have it in use are Theo. A. Havemeyer, Mahwah, N. J.; Col. J. W. Wolcott, Dedham, Mass.; Hon. Samuel Remington, Ilion, N. Y.; H. B. Claflin, New York; Rev. Henry Ward Beecher and James Neilson, N. J. There are now over 500 in use amongst this class of farmers.

"Kemp's Manure Spreader is a machine cart holding thirty to forty bushels, with large wheels, broad tire, and a short tongue to connect with the forward wheels of any farm wagon at the king bolt. It has a movable bottom similar to the traveling bed of a tread power, which, by means of suitable machinery, when in gear, moves slowly between the sides of body, carrying the load to the rear where it meets a swiftly revolving cylinder armed with teeth that picks the material to pieces and scatters it in fine particles as the team moves along. It will pulverize and evenly spread all kinds of manure, from the coarsest to the finest, ashes and lime, wet or dry, marl, muck, cotton seed, cotton seed meal, and all like fertilizers, with perfect uniformity, in any quantity per acre desired, either broadcast or in drills, in ONE TENTH THE TIME REQUIRED BY HAND. Two men with team can spread from a pile in the field 50 to 100 loads per day. Yet its chief merits lie in the QUALITY OF WORK, the manure being so thoroughly pulverized and equally distributed that *forty to sixty per cent.* more benefit is derived from the same amount than when pitched out by hand in the ordinary lumpy, uneven way. With the drill attachment, well rotted and fine manures or other fertilizers can be deposited in drills for cotton planting, or on rows of strawberry and tobacco plants and sugar cane, very rapidly and in the most perfect manner. The cart can be used as a dump cart for all ordinary farm purposes, especially for hauling potatoes and farm produce, which can be readily dumped on a pile in a moment by turning the crank wheel.

Two sizes are made, No. 1 holding about 30 bushels or an ordinary farm wagon load. No 2 one-fourth larger body, holding about 38 bushels, to meet the requirement of farmers having level land or light manure. There is also the forward truck, which includes an iron axle, wheels and tongue, making the rig complete and ready to attach to the team, without the necessity of detaching part of a farm wagon when the spreader is to be used. To save freight they are usually shipped knocked down, with directions for setting up.

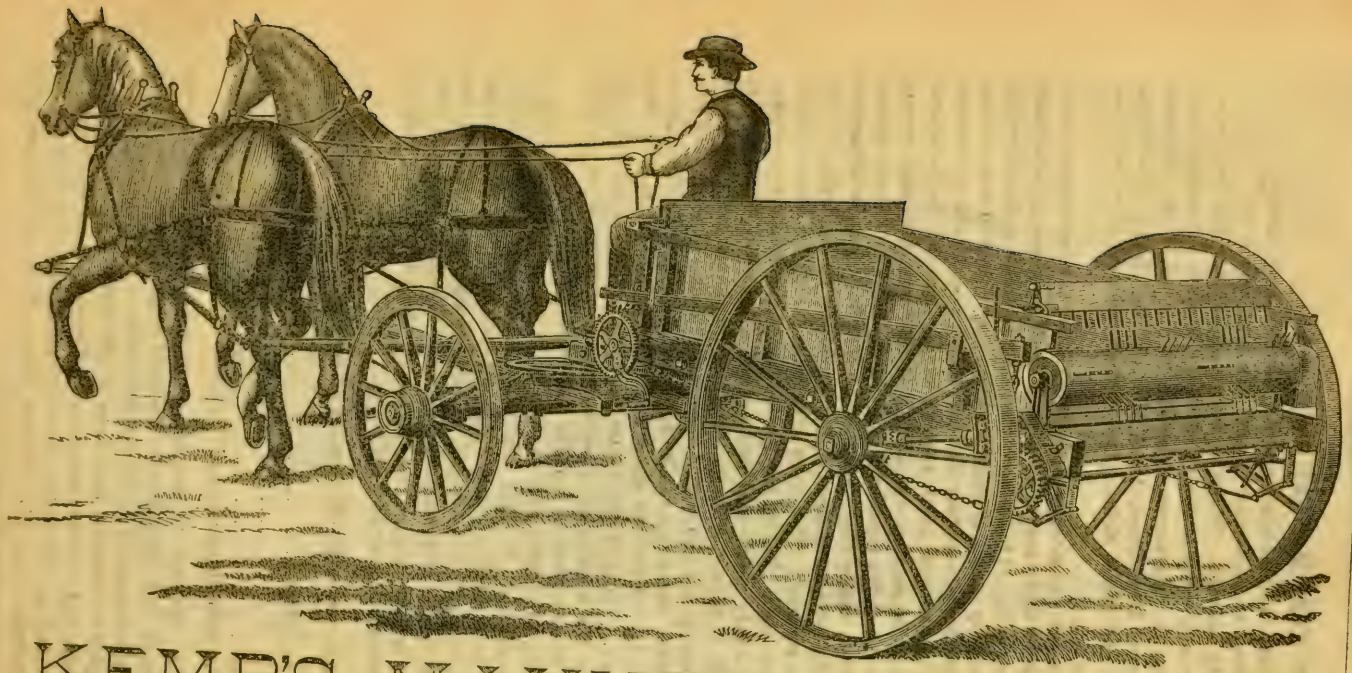
PRICES ON BOARD OF CARS AT SYRACUSE.

No. 1 Spreader, complete	$110 00	
" 2 " "	120 00	
Drill Attachment	10 00	extra.
Forward Truck with Whiffletrees and Neckyoke	25 00	

N. B.—Forward truck will only be furnished when specially ordered, as the spreader is made to connect with the forward wheels of most farm wagons.

Full directions for management sent with each machine.

Believing so thoroughly in the great usefulness of the machine, from personal examination, and considering it to the advantage of every farmer in the land to have one, we will receive and execute orders for it at manufacturers' prices. Address AGRICULTURAL REVIEW CO., *No. 32 Park Row, N. Y., or the manufacturers, Syracuse, N. Y., mentioning this publication.*



KEMP'S MANURE SPREADER.

THE GREATEST LABOR SAVING IMPLEMENT EVER MADE.

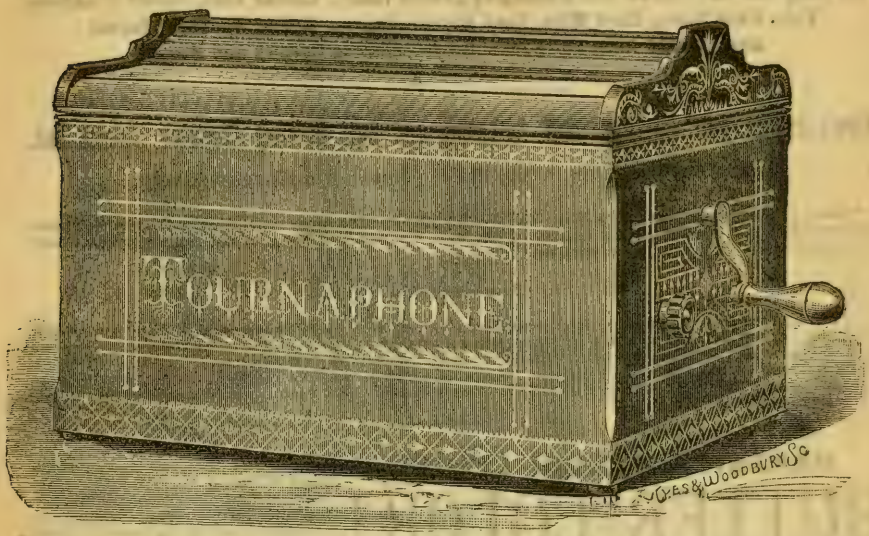
For Calalogues and Prices, address

Mention this Magazine.

KEMP & BURPEE M'F'G CO., Syracuse, N. Y.

—THE—

Tournaphone Music Company.



The above cut represents a new musical instrument which must attract the attention of the world.

Its construction and operation are so simple that a child can comprehend and play it, and yet the critical and ingenious artist cannot but admire its novelty its musical effects and beauty.

Its name is derived from the French '*tourner*," to turn, and the Greek "*phone*," a sound—hence the suggestive and euphonious word "Tournaphone."

It is not a "Music Box," with ever-repeating monotonous tunes, nor is it one of the numerous progeny of the "Organette;" but it is a complete, full-voiced, delightful musical instrument that will render any piece of music just as it was written, and with such expression, rhythm and power as the performer may wish.

In itself it is a "Thing of Beauty," and an ornament to the parlors of the wealthy, and a comfort and luxury in the homes of the millions.

It brings to every family, and puts in the ears and hearts of the present and coming generations, the great music of all time, as well as the popular compositions of the day.

The company manufacturing these instruments has a **LARGE FACTORY IN WORCESTER, MASS.**, with a **NEW YORK WAREROOM AT No. 7 WEST 14th STREET.** Ample guaranty of its standing will be gladly furnished when asked for.

The Price of a Single Tournaphone with One Piece of Music is $20.00. Special inducements and prices will be given to clubs or persons remitting for five or more instruments.

Any young man, with proper enterprise, **Can Reap a Fortune** in introducing this wonderful instrument, for it will sell itself wherever shown.

Nothing approaching it in perfection, power and sweetness of tone was ever before seen.

IT IS FULLY WARRANTED in all respects, and will be found to surpass all we say of it.

A Catalogue of Music, with all desired information, will be sent upon application.

Address all correspondence to the

TOURNAPHONE MUSIC CO., Worcester, Mass.

CHEESE & BUTTER MAKERS' SUPPLIES

and Complete Manufacturing Outfits.

Pat. Gang Cheese Presses, Self Bandaging Cheese Hoops, Cheese Vats, Patent Creamery Vats, Curd Sinks, Curd Mills, Curd Knives, Churns, Butter Workers, Rennet and Annatto Jars, Fairbanks' Scales, Cheese Screws and Hoops.

Wire's Patent Self Cutting, Self Agitating and Self Salting Circular Cheese Vat.

THREE SIZES :—5,000, 8,000, 12,000 pounds of milk respectively.

PROF. L. B. ARNOLD says of the Wire Vat :—"Its introduction must revolutionize the mode of manufacture and greatly enhance the quality of cheese. I consider it the greatest improvement I have ever met with in the art of cheese-making."

All royalties paid. Inventors and manufacturers of very best Cheese and Butter Apparatus. TWIN CREAMERS FOR FARMERS AND FACTORIES, WINNING IN ALL TESTS. YIELDS MORE CREAM AND BUTTER THAN ANY OTHERS. Simple, durable, valuable. Acid buttermilk and skim milk saved. CHEESE EXTRACT makes finest skim-milk cheese. Artificial Cream. ANNATTOINE, the Standard Cheese Coloring. PATENT SEAMLESS BANDAGE—Ready made. No waste. Perfect uniformity in size of Cheese. Samples by mail.

HANSEN'S DANISH LIQUID BUTTER COLOR!

FORTY-SIX HIGHEST PRIZES, three GOLD MEDALS at World's Fairs. Vegetable Oil. Colors the Finest Butter made in Europe. Fast superseding all other Coloring in America. Does not color the Buttermilk. Butter beautiful. Greatly enhances value. No Alkali. Dozen bottles and directions Free to Druggists or Dealers. HANSEN'S EXTRACT OF RENNET and STANDARD CHEESE COLOR. No Manufacturer or repacker can afford to neglect Danish preparations.

ARTIFICIAL CREAM CHEESE.—Four lbs. of Butter first taken from each 100 lbs. milk, then adding 1 lb. of table or salad oil to each 100 lbs. of skim milk, and getting as the result, 7½ lbs. of Cheese. Sample Cheeses sent to the Secretary of the Royal Agricultural Society, London, England, calls forth the following from the editor of the London *Agricultural Gazette* :—"That anyone can expect, or even wish, to discourage the introduction into this country of such capital food as the American farmers thus offer us, is impossible." London, April 24th, 1882.

Bradley Butter Boxes, Butter Pails and Butter Trays.

SIX SIZES :—½ to 10 pounds.

PRESERVALINE!

Patented in Europe, Germany and America. Approved by practical men for keeping Milk, Cream, Buttermilk, Butter, etc., sweet. Warranted Harmless, Pure and Cheap.

PRESERVALINE will keep Milk Sweet from 4 to 6 days in hot weather, so that all the Cream can be obtained and the Skim Milk still left Sweet to make into Cheese or for other uses.

Patent Rotary Cut Cheese Box Hoops and Rims. Also, Cheese Box Heading, Tacks and Nails. SEND FOR ILLUSTRATED CATALOGUE.

BURRELL & WHITMAN, Little Falls, N. Y.

CHR. HANSEN'S LABORATORY

Copenhagen, Denmark. Little Falls, New York.

DAIRY PREPARATIONS

· RENNET EXTRACT · CHEESE COLORING · BUTTER COLORING ·

CHR. HANSEN'S,

Danish Rennet Extract, Cheese Coloring and Butter Coloring,

ARE THE ONLY ARTICLES

Manufactured in his Laboratories, and for which he will hold himself responsible.

Highly Concentrated, Perfectly Preservable, Uniform and Pure

FORTY-SIX FIRST CLASS PRIZE MEDALS

AT FORTY-SIX NATIONAL, STATE AND COUNTY FAIRS. USED EVERYWHERE BY THE BEST BUTTER MAKERS.

DEPOTS IN ALL PARTS OF THE WORLD.

BURRELL & WHITMAN, Little Falls, N. Y., General Agents for the United States and Canada.

FARMS AND HOMES!

-IN-

SOUTHERN MINNESOTA

AND

EASTERN DAKOTA,

ALONG THE LINE OF THE

WINONA & ST. PETER RAILROAD.

☞ 1,160,000 Acres of Choice Lands. ☜

THESE LANDS ARE OFFERED FOR SALE

ON LONG CREDIT WITH A LOW RATE OF INTEREST,

At Prices Ranging from

$2.00 to $4.00 per Acre, - - - - in Dakota, and
$3.00 to $6.00 " - - - - in Minnesota.

A few tracts of Land lying near to important Towns, are valued at from $7.00 to $8.00 per Acre.

12 1-2 Per Cent. Discount for all Cash.

The purchaser of **160 ACRES** will be allowed a rebate of the whole amount of the fare paid for passage over the C. & N. W. and W. & St. P. Railways.

EMIGRANTS' MOVABLES,

including household goods, farm implements and live stock, also trees and shrubbery, will be transported from Chicago, and all the principal points on the lines operated by the Chicago and North-Western Railway Company, to places within the limits of these lands, **at the very Lowest Emigrant Rates.**

Maps of the lands of this Company, and a hand-book or guide, giving description, prices, location, and all needful information will be furnished free.

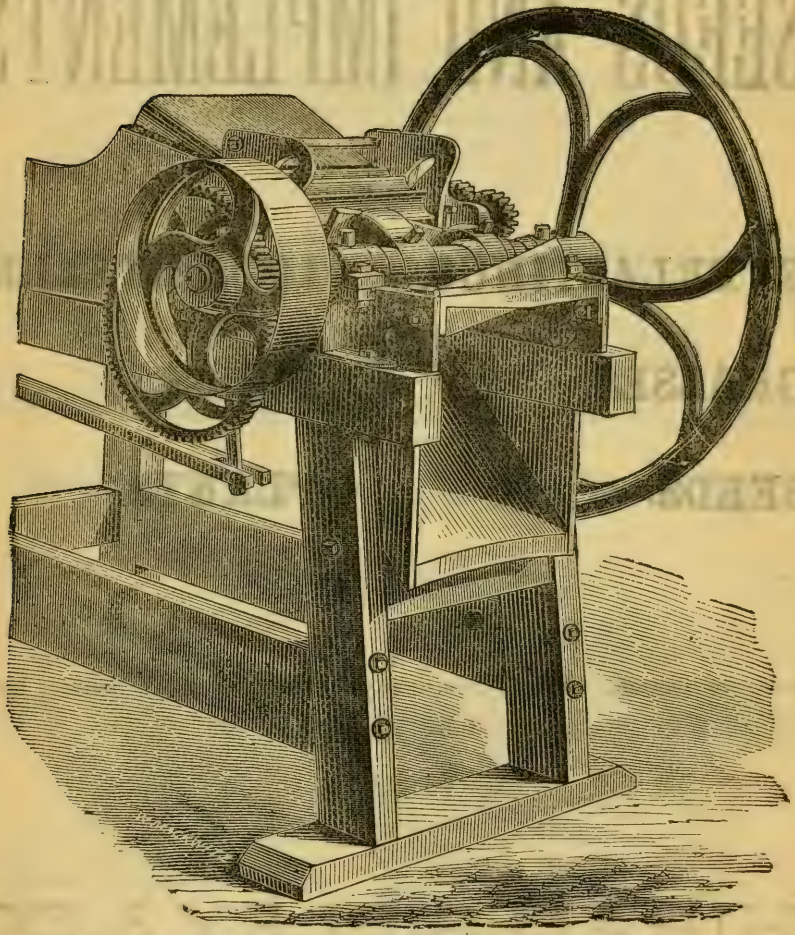
Call on or Address H. M. BURCHARD, Land Agent of Winona and St. Peter Railroad Company, Marshall, Minn., or

CHAS. E. SIMMONS,

Land Commissioner, General Offices of the C. and N. W. R'y Co., Chicago, Ill.

Improved Baldwin's American Fodder & Ensilage Cutter

The Only Reliable Ensilage Cutter Manufactured.



With Patent Safety Balance Wheel,

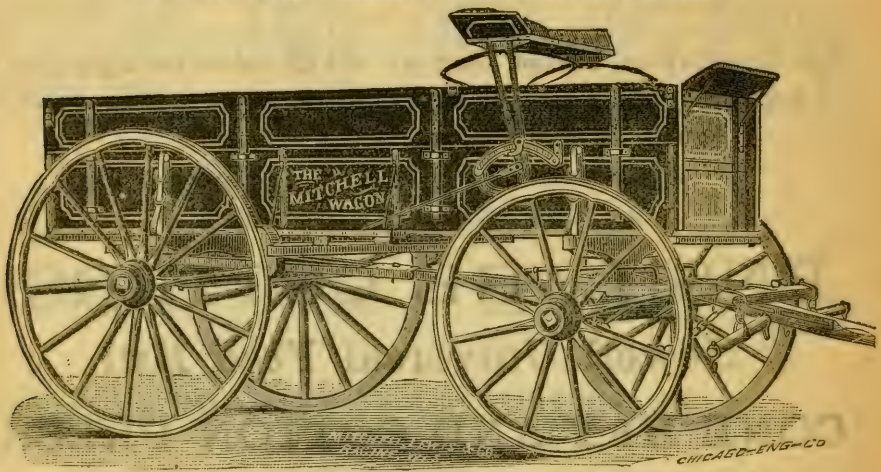
Securing perfect safety to the operator and machine. Cuts all kinds of Dry and Green Fodder. These machines are in use by the leading Farmers and Stock Raisers of the country, for Cutting all kinds of Dry and Green Fodder. We manufacture nine sizes for Hand and Power. Material, Workmanship and finish the best. Send for Illustrated Catalogue, containing price list, description and testimonials. Correspondence solicited.

C. PIERPONT & CO., Manufacturers, New Haven, Conn., U. S. A.

GENERAL AGENTS.—R. H. Allen & Co., 189 and 191 Water St., N. Y; Jos. Breck & Sons, Boston, Mass.; E. S. Bristol & Co., Chicago, Ill.; E. J. & Wm. Lindsay, Milwaukee, Wis.; Semple & Birge M'f'g Co., St. Louis, Mo.; Marcus C. Hawley & Co., San Francisco, Cal.; Baker & Hamilton, San Francisco, Cal.; Knapp, Burrell & Co., Portland, Oregon.

MITCHELL, LEWIS & CO., RACINE, WIS., U.S.A.

WAGON MANUFACTURERS.

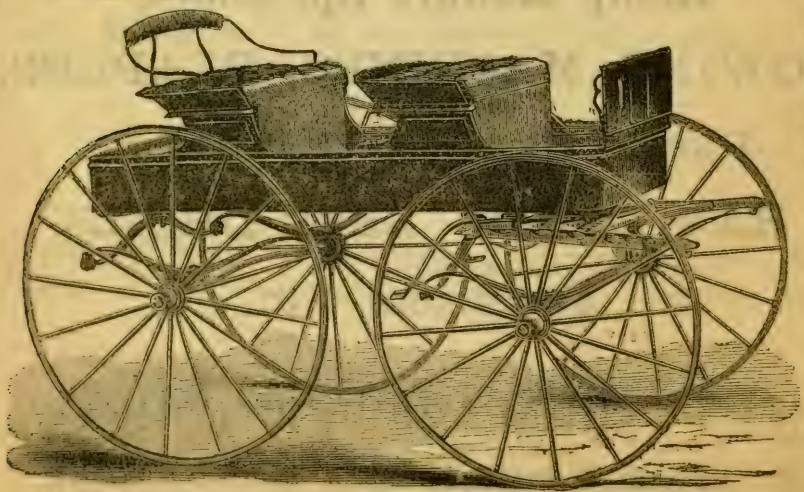


THE OLD RELIABLE MONARCH OF THE ROAD.

Made in fifty different styles adapted to the wants of farmers and teamsters everywhere. The MITCHELL is the standard for strength, lightness of draft and durability.

Farm, Freight and Spring Wagons, Open and Top Buggies.

Only the choicest stock used, and an experience of fifty years in the business is a safe guarantee for a first-class article.

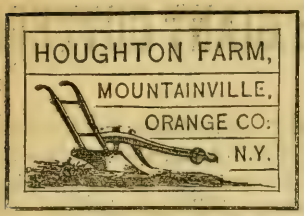


Sold by reliable agents in nearly every State in the Union. We have a department exclusive and removed from our Farm Wagon Works for the manufacture of **SPRING WAGONS and BUGGIES**, and on this class of work we cannot be excelled.

SEND FOR ILLUSTRATED CATALOGUE AND PRICE LIST.

MITCHELL, LEWIS & CO., Racine, Wisconsin.

Visitors Always Welcome at Houghton Farm!



L. VALENTINE, Prop'r.

Railroad Station on the Farm, on the Short-Cut Branch of the Erie, midway between Turner's and Newburgh. Fifty miles from New York.

NORMAN HORSES.
JERSEY CATTLE.
SO'DOWN SHEEP.
ESSEX SWINE.

AGRICULTURAL EXPERIMENTS OF INTEREST ALWAYS IN PROGRESS. Prof. D. P. Penhallow, Botanist and Chemist of Experiment Dep't.

FOR SALE:—Grandsons of Eurotas, No. 2,454, the greatest of butter cows. These calves out of choice imported and selected cows, and sired by Ramapo, No. 4,679; he by Miletus, No. 3,186, out of Eurotas. Address all communications as above.

HENRY E. ALVORD, General Manager.

B. F. BARNES,

CAMPBELLTOWN,

W. FLORIDA.

The New Sheep Dip.

LITTLE'S CHEMICAL FLUID.

Patented in U. S., July 3, 1877.

MORRIS LITTLE & SON,

PROPRIETORS AND MANUFACTURERS.

This popular and favorite Dip is a sure cure and remedy as follows:

SHEEP—Scab, Ticks, Lice, Fly and Maggots, Grub in the head, Worms in Sheep and Lambs. Improvement in quantity and quality of the wool more than pays for the Dip: HORSES—Mange, Lice, Thrush, Grease, Cracked Heels, Saddle and other Galls, Bots, Lung Disease. CATTLE—Mange, Lice, Texas Ticks, Foot and Mouth Disease, Pleuro-pneumonia; prevents Abortion. HOGS—Mange, Lice and Cholera. DOGS—Mange and Fleas; makes the coat glossy. Internally for Worms in all animals; Ulcers and Wounds of all kinds. POULTRY—Fleas and Lice. Purifies the houses. HORTICULTURE—Aphis, Blight, Scale on Orange Trees, Bark Lice, Rust in Carrots.

☞ Is superior to all other Dips and cheaper, for one gallon is enough for 100 gallons of cold water for use. To be used cold. Send stamp for recent and important U. S. testimonials and reduced price list to

T. W. LAWFORD,

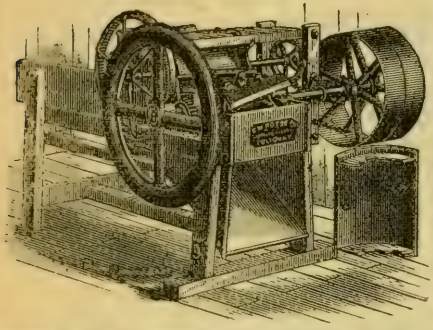
General Agent, 396 *East Chase Street,*

Baltimore, Md.

(Mention this Magazine.)

ENSILAGE CUTTERS.

ROSS BIG GIANT AND LITTLE GIANT CUTTERS



"Specials" for Ensilage, Stock Raisers, Dairymen, &c. Are guaranteed superior to all others. Immense strength, weight and capacity. Will cut two to four times as fast as any other. Have the Ross Patent Safety Fly Wheels, Extensible Joints, Convex Gears, Ring Rollers, etc., etc., the only machine that will cut fast and stand the severe work. They cut every kind of grass and stalk for Ensilage, in a most perfect manner, as well as every kind of dry fodder, including the heaviest western corn, hard ears, and all cutters in use by all the largest Ensilagists in the United States.

Send for illustrated circular and list of users and testimonials to

E. W. ROSS & CO.,

FULTON, N. Y.

AGRICULTURE IN TEXAS!

The Houston & Texas Central Railway,

(*Embracing 700 Miles of Road in Operation,*)

Its main line running through the centre of the State, from the Northern boundary to tide-water connection at Houston, and with branches between Hempstead and Austin —the Capital—and from Bremend via Waco into Western, Central and Northwestern Texas, has upon, and adjacent to its line, upwards of 5,000,000 acres of land of its own, and millions of acres of State and other unoccupied lands, which can be purchased at $1.50 and upwards per acre, according to location and agricultural value.

Low rates of fare are in effect from all parts of the United States, Canadas and Europe.

COME AND SEE TEXAS, as personal inspection will prove much more satisfactory than any description that can be furnished.

Be sure that your tickets read via Denison or Houston, thence over the Houston and Texas Central Railway to destination.

For maps and pamphlets descriptive of Texas, address

F. L. MANCHESTER, Eastern Pass'r Agt, 419 Broadway, New York,

or C. B. GRAY, Ass't Gen'l Pass'r Agt,

J. WALDO, Traffic Manager, Houston, Texas.

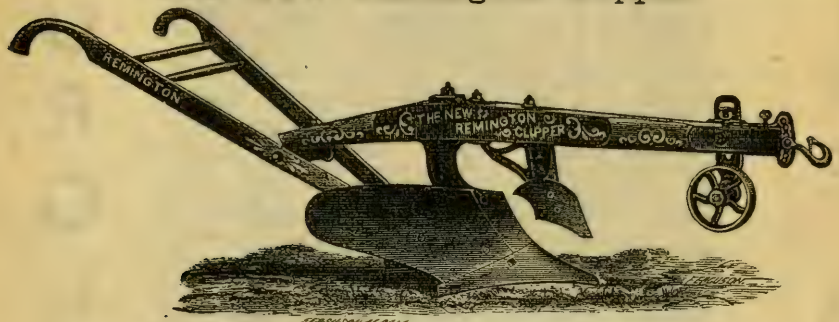
Remington Agricultural Company,

ILION, N. Y.

Manufacturers of a General Line of **Agricultural Implements, Plows, Cultivators, Horse Hoes, Mowers, Wheel Horse Rakes, Shovels, Hoes, Forks, &c., &c.**

Branch Offices—57 Reade Street, New York. 21 South Howard Street, Baltimore, Md.

The New Remington Clipper.

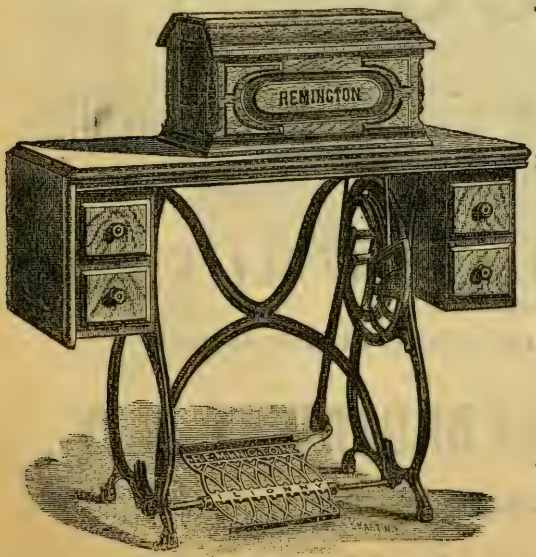


CARBON METAL, No. 12.

The **"NEW REMINGTON CLIPPER"** is the "latest thing out" in Plows. It is a decided practical improvement over every other. The most experienced Plow Maker in this country has been engaged upon it, and he has produced the "NEW REMINGTON" by combining the best points of other plows and carefully improving them. He has thus perfected a *Model Plow* which for all general purposes excels any Plow now in use.

Advantages of the Carbon Metal.—We are not only able to make the Carbon Plow LIGHTER than the Chilled Plow, but having no *warping* to overcome we can make the moldboard fit the standards without the use of *packing*, so that when a new moldboard is wanted the farmer will have no difficulty in putting it on in place of the old one. Every board fits the standard. Those who have had to replace moldboards for the Chilled Plow know what a disadvantage they labor under in this respect.

Every part of the Plow fits its place so perfectly that we can ship the Plows "knocked down," and the purchaser will have no trouble in putting them together.



The New Remington.

IT HAS NO EQUAL.

SIMPLE AND DURABLE IN CONSTRUCTION.

DOES ALL KINDS OF WORK.

Running More Easily and Quietly than any Machine made.

GOOD AGENTS WANTED.

Address Sewing Machine Department,

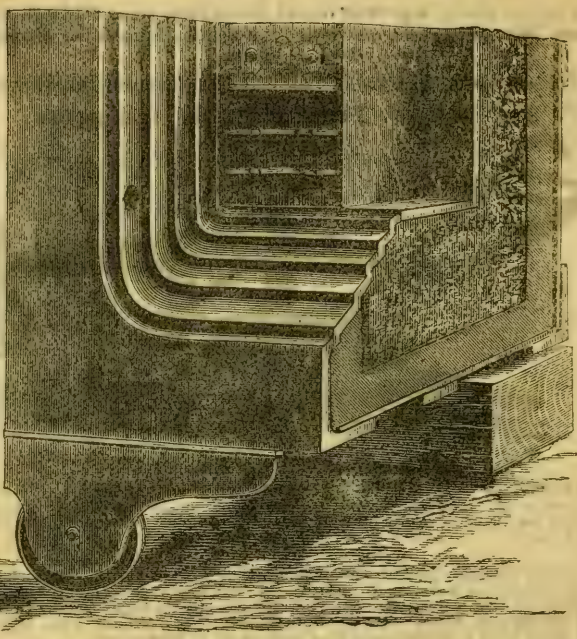
E. REMINGTON & SONS.

281 & 283 Broadway, N. Y.

☞Catalogues and Circulars sent on application.

BUTLER'S SAFES!

F I R E A N D



B U R G L A R

—PROOF.—

AULTS, VAULT DOORS & SAFE DEPOSIT WORK

A SPECIALTY.

ANK AND TIME LOCKS OF ALL KINDS.

SEND FOR PRICE LIST AND SPECIFICATIONS.

. H. BUTLER, 291 BROADWAY, N. Y.,

—ESTABLISHED 1850.—

General Agent for Diebold Safe and Lock Company.

WESTON'S

AMERICAN MEDICINAL HORSE AND CATTLE FOOD.

THE BEST ARTICLE EVER USED.

Frees Horses from Colic, Belly-Ache, Coughs, Colds, Bots, Worms, Distemper, Dyspepsia, Dropsy or Swollen Legs, Heaves, Pinkeye, Epizootic or Influenza. A Sure Cure for Milk Fever and Garget in Cows. A Sure Cure for Hog Cholera, Kidney Worms, Chicken Cholera, Gapes, Roup, Fever, Etc. No Saltpetre in it. No Resin in it. No Black Antimony in it. No Sulphur in it. No Arsenic in it. No Poison in it. A substitute to condition animals without arsenic.

This Food is a Condition Powder and Food in one, and has been in use since 1872. The only article that cured the Epizootic in 1872 and 1880.

HOW TO USE IT—ONE QUARTER OF A PINT NIGHT AND MORNING.

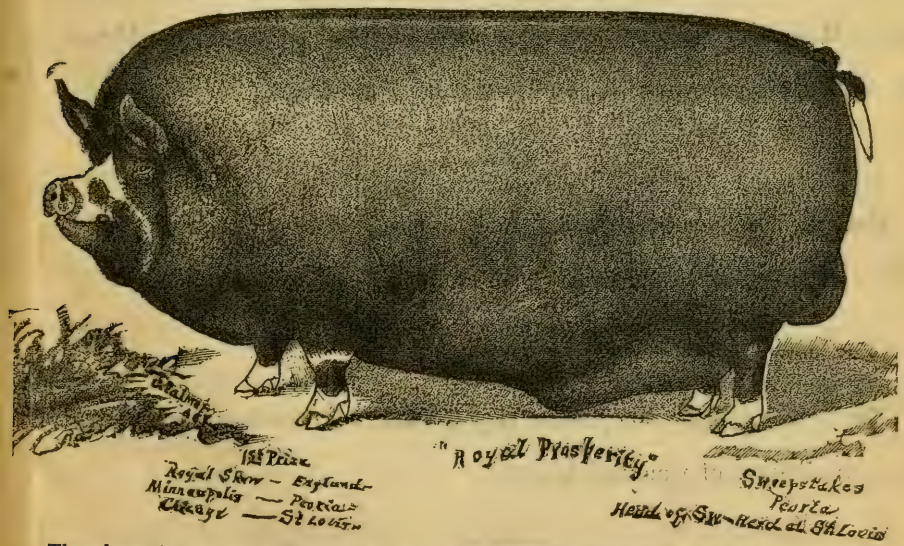
6	lb. pack.,	$1.00;	per doz.,	$9.00.	100 lb.,	price $10.80.	You add	400 lbs.	fine feed and	8	lbs. of salt
2½	"	.50;	"	4.50;	50	"	6.00.	"	200	"	"	4	"
Small	"	.25;	"	2.50.	25	"	3.00.	"	100	"	"	2	"

For Stock Farms, in Barrels, 200 lbs. Directions accompany each package, bag or barrel.

Also, it will make hens lay all eggs nature calls for by mixing it in their food. It warms them. The life of millions of chickens can be saved by its being mixed in their feed a few days after being hatched, three or four times per week, until they feather. Keeps them free from worms or gapes. Where WESTON'S CONDITION POWDER FOOD cannot be purchased, send the price for one or more dozen, and it will be shipped to your address freight paid. Wanted—an agent to sell the above in every city and town where it cannot be purchased. ☞ For sale by all General Stores and Feed Dealers. A discount to agents. Never left on sale.

☞ Largely used by Adams Express Company and Livery Stables.

General Depot, 168 BLEECKER STREET, New York City.



The above is a correct likeness of one of the Sires used in my BERKSHIRE HERD, where Stock of the highest breeding and quality are for Sale.

Parties desiring to purchase are requested to come and see them, or correspond with

ALEX. M. FULFORD,

BEL-AIR, - - - MARYLAND.

Advertise in the AGRICULTURAL REVIEW if you wish to reach the leading farmers of America and Europe. It circulates among the best class of agriculturists and practical men in the world, and is the best advertising medium for all kinds of goods used by this class. Objectionable advertisements are not admitted to its columns.

TO BUTTER AND CHEESE MAKERS.—The new Emulsing Machine for making the new process cheese, described in the article on Dairying and Dairy Improvements in this Pamphlet, is worthy of your careful investigation.

If you want an Ensilage Cutter, Farm Wagons, Agricultural Implements, Machinery, Steam Engines, or anything used on the farm, address the Agricultural Review Co., 32 Park Row, New York.

Read about the improved process for making cheese, described in the article on Dairying and Dairy Improvements.

Buy a Kemp Manure Spreader if you want to do the best work at the least expenditure of time and labor.

If you want the best Agricultural Journal published, subscribe for the AGRICULTURAL REVIEW.

ASHTON'S FACTORY FILLED SALT.

THE most economical, as well as the only safe Salt, to use in making BUTTER and CHEESE. It takes about six pounds of Salt to make one hundred pounds of Butter. The use of ASHTON'S Salt would not cost to exceed three cents on one hundred pounds of Butter over any of the other brands of Salt. It enhances the value of Butter from two to five cents per pound. One sack of ASHTON'S Salt will suffice for at least 3,700 pounds of Butter, so it is apparent at once, that for any difference in price between the brands of Salt, it is not worth while for the farmer or butter maker to use any other kind of Salt than ASHTON'S FACTORY FILLED. This fact is understood by the best makers of Butter in the country, and by the merchants in Dairy products in all markets. If ASHTON'S Salt enhanced the value of Butter only one cent per pound, one sack of it would be worth twenty times the price of any other brand. The enhanced value of the Butter, in short, would give to a sack of ASHTON'S Salt a value of thirty-seven dollars over any other brand.

For Curing Meat, and for Household purposes, it has no equal. Address for circular and full information, FRANCIS D. MOULTON & CO., 127 Water St., New York, Importers and Sole Agents for the United States and Canada, and Importers and Dealers in all kinds of Foreign and Domestic Salt.

Ashton's Factory Filled Salt is put up in One-Bushel and Four-Bushel Linen Sacks.

AT THE ATLANTA EXPOSITION ASHTON'S FACTORY FILLED SALT TOOK THE HIGHEST PREMIUM—THE GOLD MEDAL—THE HIGHEST AWARD MADE, AS THE BEST SALT FOR DAIRY AND HOUSEHOLD PURPOSES.

SECOND YEAR!

The Agricultural Review

AND JOURNAL OF THE

American Agricultural Association.

A Magazine Devoted to Agriculture & Industry.

Pronounced by the Press and the Highest Individual Authorities the Best Practical Publication Issued.

Contains Exhaustive Articles on Agricultural Practice and Science by the Ablest Writers and Experts of America and Europe.

Each Issue Worth More than the Price of a Whole Year's Subscription.

——AMONG ITS CONTRIBUTORS ARE——

Hon. CASSIUS M. CLAY, Dr. E. LEWIS STURTEVANT, Hon. EDWARD ATKINSON,
Dr. E. DE LARELEYE, Sir J. B. LAWES of England, Rear-Admiral AMMEN,
Dr. JOHN A. WARDER, FRANCIS D. MOULTON, Esq., Col. GEO. E. WARING, Jr.,
Gen. FRANCIS A. WALKER, and others.

Terms, $3 per Year; Six Copies for $15; Ten Copies for $22.50. Subscriptions sent at once will be good for the remainder of this year and for 1883.

Address JOS. H. REALL, Editor and Publisher,

32 PARK ROW, "World Building," NEW YORK.